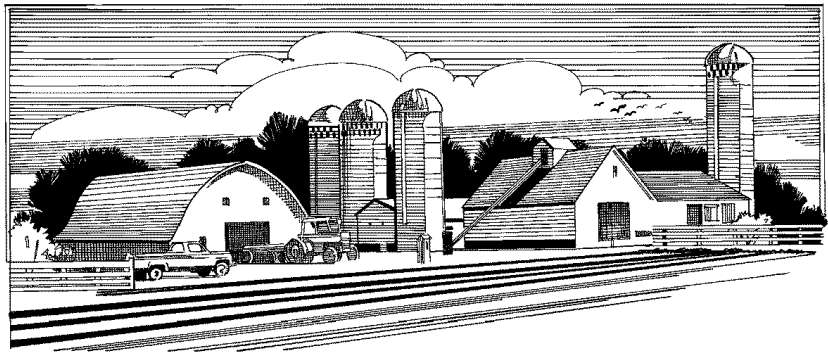


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# DAIRY FARM MANAGEMENT

## ***BUSINESS SUMMARY NEW YORK STATE 2002***



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## ABSTRACT

Business and financial records for 2002 from 219 New York dairy farm businesses are summarized and analyzed. This analysis demonstrates the use of cash accounting with accrual adjustments to measure farm profitability, financial performance, and costs of producing milk. Traditional methods of analyzing dairy farm businesses are combined with evaluation techniques that show the relationship between good management performance and financial success.

The farms in the project averaged 297 cows per farm and 22,312 pounds of milk sold per cow, which represent above average size and management level for New York dairy farms. Net farm income excluding appreciation, which is the return to the operator's labor, management, capital, and other unpaid family labor, averaged \$38,185 per farm. The rate of return to all capital invested in the farm business including appreciation averaged 2.9 percent.

Differences in profitability between farms continue to widen. Average net farm income excluding appreciation of the top 10 percent of farms was \$311,300, while the lowest 10 percent was a negative \$173,275. Rates of return on equity with appreciation ranged from 64 percent to negative 37 percent for the highest 10 percent and the lowest 10 percent of farms, respectively.

In 2002, farms supplementing the herd with bovine somatotropin (bST) attained higher rates of milk production per cow, had larger herds and were more profitable than farms not supplementing with bST for all measures other than labor and management income per operator. Farms adopting rotational grazing generally produced less milk per cow than non-grazing farms but had somewhat lower costs of production and higher profitability. Large freestall farms averaged the highest milk output per cow and per worker, the lowest total cost of production and investment per cow, and the greatest returns to labor, management and capital. Farms milking three times a day (3X) were larger, produced more milk per cow and had higher net incomes than herds milking two times per day (2X). Operating costs per hundredweight of milk were \$0.22 per hundredweight higher for 3X than 2X milking herds, while output per cow was 3,768 pounds higher. One should not conclude that adoption of these technologies alone were responsible for differences in performance.

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## INTRODUCTION<sup>1</sup>

Dairy farm business summary (DFBS) projects are an integral part of Cornell Cooperative Extension's agricultural educational program in New York State. The Department of Applied Economics and Management of the College of Agriculture and Life Sciences at Cornell University, and County Extension staff, cooperate in sponsoring DFBS projects. In 2002, nearly 300 dairy farms participated. Business records submitted by dairy farmers from 43 counties provide the basis for continuing Extension programs, data for applied studies, and for use in the classroom. Regardless of the use of the data, confidentiality of individual farm data is maintained.

Cornell Cooperative Extension educators enroll the cooperators and collect the records. In addition, assistance is provided by individual consultants Bruce Dehm and Charles Radick, and by consultants from Farm Credit of Western New York and First Pioneer Farm Credit. Each cooperator receives a detailed summary and analysis of his or her business. All educators are using a microcomputer in their offices or on the farm to process and return the individual farm business reports for immediate use. Regional reports are prepared by Cornell faculty and used by DFBS cooperators and other farmers to compare their farm performance with regional averages. The DFBS program helps farmers improve accounting and financial analysis techniques, develop managerial skills and solve business and financial management problems.

Individual farm records from the 6 regions and 43 counties of the State (Figure 1, page 2) have been combined and the total data set analyzed to determine the effects of different levels of price, technology, and management on dairy farm incomes. This study provides current dairy farm business information for use by farmers, Cooperative Extension staff, teachers, and others concerned with the New York dairy industry.

### **Farms Included**

Data from 219 specialized dairy farms are included in the main body of this report. These farms do NOT represent the "average" for all dairy farms in the State. Participation was on a voluntary basis, therefore, not all areas or types of operations were proportionately represented (Figure 1, page 2). Participants represent more than 3 percent of the milk cow operations in New York (see Appendix Table A3). The 219 specialized dairy farms represent a cross section of better than average commercial dairy farm owner/operators in the State. Dairy farm renters, dairy-cash crop farmers with crop sales exceeding 10 percent of milk sales, and part-time dairy operators have been excluded from the main body of this report. Data on dairy farm renters are summarized separately in the supplemental information section of the publication.

### **Features**

Accrual adjustment procedures have been used to provide the most accurate accounting of farm receipts and farm expenses for measuring farm profits. An explanation of these procedures is found on page 11. Five measures of farm profitability; net farm income, labor and management income, return on equity, return on all capital, and return to all labor and management are calculated on pages 13 through 16. The balance sheet is presented with the current portion of intermediate and long-term debt identified as a current liability, on pages 16 and 17. The statement of owner equity, which shows the interrelationship between farm profitability, non-farm cash flows and net worth is presented on page 19. A detailed cash flow statement, as well as budgeting data and debt repayment analysis is presented on pages 20 through 22.

The whole farm method of calculating the cost of producing milk is detailed on pages 30 through 35. The operating cost, purchased inputs cost and total cost of producing 100 pounds of milk are developed and analyzed. Farm business charts for farms with conventional and freestall housing are presented on pages 63 through 67. Specific studies of the performance of dairy farms using bST, rotational grazing and three times (3X) a day milking are presented on pages 71, 76 and 77.

### **Acknowledgements**

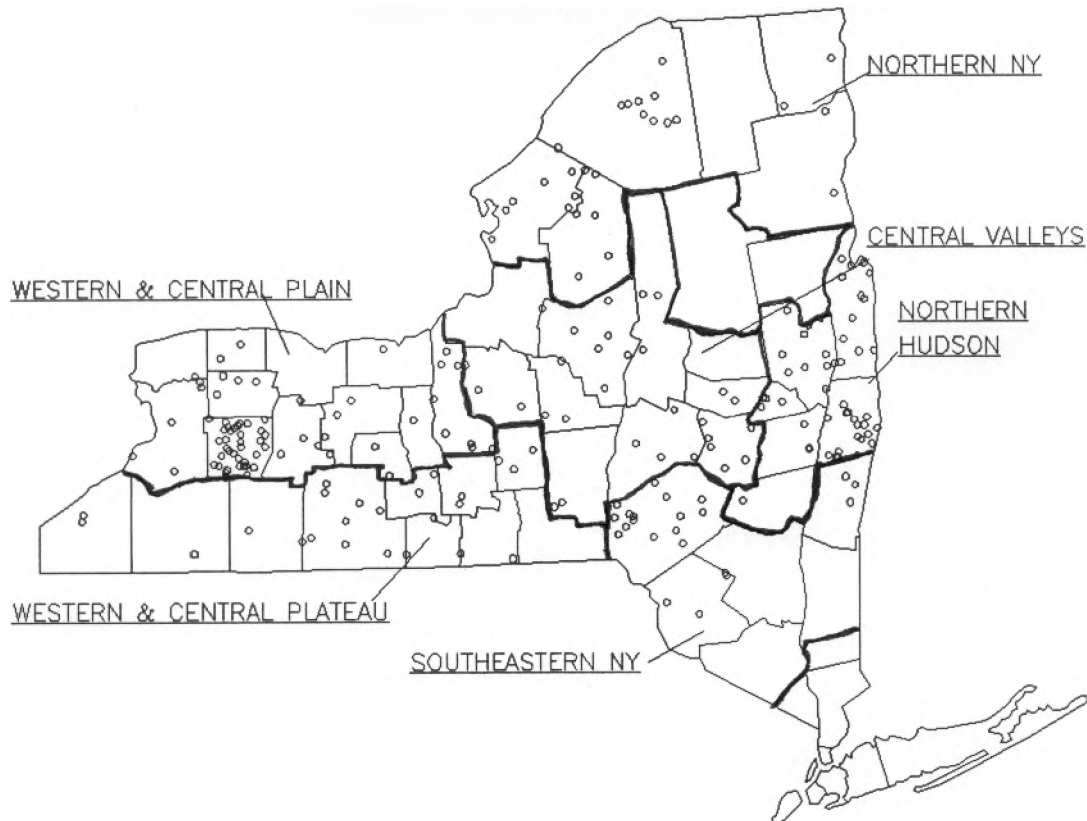
The authors wish to acknowledge extension field staff and cooperating farmers for their invaluable cooperation on this project. In addition, the authors appreciate the comments provided by Eddy LaDue and Loren Tauer.

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<sup>1</sup>This report was written by Wayne A. Knoblauch, Professor; Linda D. Putnam, Extension Support Specialist, in the Dept. of Applied Economics and Management at Cornell University, and Jason Karszes, Senior Extension Associate, Pro-Dairy.

Figure 1.

**LOCATION OF THE 219 NEW YORK DAIRY FARMS  
IN THE 2002 DAIRY FARM BUSINESS SUMMARY**



**2002 Regional Summary Publications**

<u>Region</u>	<u>Publications</u>	<u>Author(s)</u>
Western and Central Plain	E.B. 2003-04	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, John Hanchar, Jason Murphy, Judith Barry, Steve Richards, & George Allhusen
Northern Hudson	E.B. 2003-09	George J. Conneman, Linda D. Putnam, Cathy S. Wickswat, Sandra Buxton, Jennifer J. Siira, & Jason Karszes
Central Valleys	E.B. 2003-10	Eddy L. LaDue, Jacqueline M. Hilts, A. Edward Staehr, Zaid Kurdieh, Charles Z. Radick, Jason Karszes & Linda D. Putnam
Southeastern New York	E.B. 2003-11	Wayne A. Knoblauch, Linda D. Putnam, Stephen E. Hadcock, Larry R. Hulle, Mariane Kiraly, & Joseph J. Walsh
Northern New York	E.B. 2003-14	Wayne A. Knoblauch, Linda D. Putnam, William Van Loo, Peggy Murray, Frans Vokey, Anita Deming, Chris Nobles, Molly Ames, & Jason Karszes
Western and Central Plateau	E.B. 2003-20	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, George Allhusen, James W. Grace, Joan S. Petzen, and Andrew N. Dufresne

### THIRTY YEARS OF NEW YORK STATE DAIRY FARM BUSINESS DATA

New York dairy farming has changed dramatically over the past 30 years (Table 1, page 4). Dairy cows per farm on cooperating farms increased 323 percent between 1972 and 2002 and nearly one-half of that increase occurred in the last 10 years. Milk output per cow increased more than 76 percent and the largest increase occurred between 1982 and 1992. The DFBS sample is not representative of all farms in New York State. State census data indicate the average herd in the state increased in size 161 percent over the 30-year period. Labor efficiency was up 138 percent on DFBS farms, and the operating cost of producing milk increased more than 204 percent with the big jump occurring between 1972 and 1982.

There is a large increase in farm capital invested per farm, up 1,061 percent since 1972. Farm net worth excluding deferred taxes has increased 839 percent over the last 30 years. Net farm income per farm decreased two percent (adjusted for 2002 dollars) and return on equity capital decreased 75 percent since 1972. Labor and management income per operator is down 133 percent from 30 years ago (adjusted for 2002 dollars).

### FOUR YEARS OF VARIABILITY

Recognition and evaluation of the progress that has occurred on farms can best be achieved by studying the same farms over a period of time. Table 2 presents average data from 155 farms that have been DFBS cooperators each year since 1999. Chart 1 shows the price received for milk in comparison to the operating cost of producing a hundredweight of milk for these farms. The high milk price and lower costs in 1999 and 2001 provided dairy farmers with excellent returns. The year 2002 saw the lowest operating margin per hundredweight at \$1.93.

Net farm income without appreciation in 2002 was 75 percent below the 1999 average, and 41 percent below the 2000 average. Net worth showed a small improvement in 2000, increased rapidly in 2001 and decreased one percent in 2002.

The last 4 years have been a period requiring critical decision making and improved management skills on New York dairy farms. Risk management skills, including output price management, are becoming more important to farm business success.

**Chart 1.**

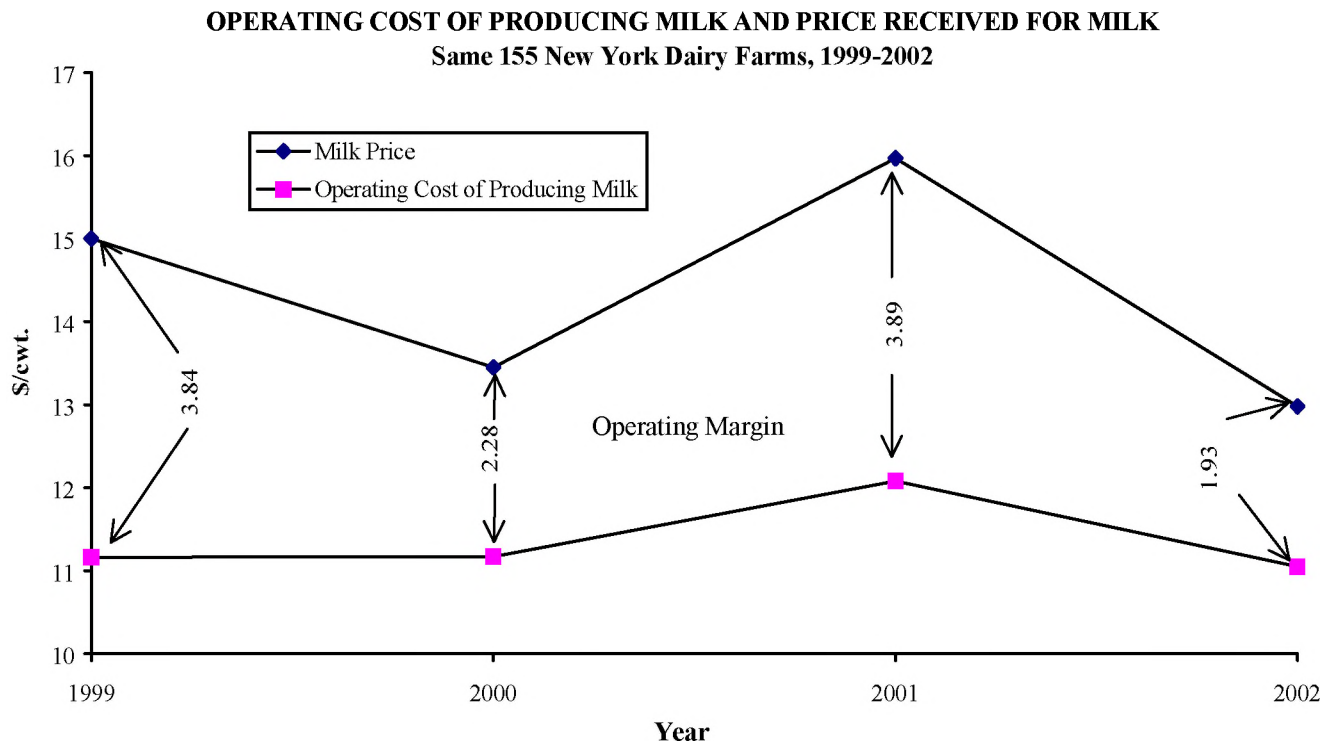


Table 1.

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**New York Dairy Farms, 1972 - 2002**

Selected Factors	1972	1982	1992	2002
Number of farms	571	572	357	219
<u>Size of Business</u>				
Average number of cows	70	82	123	297
Average number of heifers	45	67	96	226
Milk sold, cwt.	8,875	12,105	23,130	66,177
Worker equivalent	2.3	2.83	3.60	7.21 <sup>4</sup>
Total tillable acres	188 <sup>2</sup>	262	346	660
<u>Rates of Production</u>				
Milk sold per cow, lbs.	12,680	14,762	18,789	22,312
Hay DM per acre, tons	2.4	2.6	2.8	3.1
Corn silage per acre, tons	11	14	15	15
<u>Labor Efficiency</u>				
Cows per worker	30	29	34	41 <sup>4</sup>
Milk sold per worker, lbs.	385,870	427,739	641,893	917,854 <sup>4</sup>
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	25%	24%	28%	30%
Dairy feed & crop expense per cwt. milk	\$2.06	\$4.53	\$4.70	\$4.79
Operating cost of producing cwt. milk	\$3.62	\$10.19	\$10.43	\$11.01
Total cost of producing cwt. milk	\$6.43	\$14.87	\$14.32	\$14.25
Milk receipts per cwt. milk	\$6.41	\$13.56	\$13.58	\$12.98
<u>Capital Efficiency</u>				
Total farm capital	\$173,780	\$467,676	\$810,201	\$2,017,818
Farm capital per cow	\$2,480	\$5,703	\$6,587	\$6,794
Machinery & equipment per cow	\$489	\$1,081	\$1,203	\$1,261
Real estate per cow	\$1,213	\$2,735	\$3,015	\$2,612
Livestock investment per cow	\$576	\$1,488	\$1,473	\$1,827
Asset turnover ratio	0.40	0.40	0.63	0.53
<u>Profitability</u>				
Net farm income without appreciation <sup>5</sup>	-----	\$39,993	\$58,055	\$38,185
Net farm income with appreciation <sup>5</sup>	\$83,881	\$46,049	\$79,882	\$82,482
Labor & management income per operator/manager <sup>5</sup>	\$42,986	\$6,433	\$14,431	\$-14,243
Rate of return on:				
Equity capital with appreciation	6.3%	1.0%	5.0%	1.6%
All capital with appreciation	6.2%	4.3%	5.7%	2.9%
All capital without appreciation	-----	-3.8%	3.6%	0.7%
<u>Financial Summary, End Year</u>				
Farm net worth	\$125,031 <sup>3</sup>	\$306,589	\$529,858	\$1,173,836
Change in net worth with appreciation	-----	-----	\$29,287	\$1,735
Debt to asset ratio	0.36 <sup>3</sup>	0.39	0.36	0.43
Farm debt per cow	\$1,011 <sup>3</sup>	\$2,261	\$2,390	\$2,899

<sup>2</sup>Acres of cropland harvested.

<sup>3</sup>Average of 416 dairy farm cooperators submitting financial information in 1972.

<sup>4</sup>Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.

<sup>5</sup>Adjusted for inflation using Consumer Price Index – 2002 dollars.

Table 2.

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 155 New York Dairy Farms, 1999 - 2002**

Selected Factors	1999	2000	2001	2002
Milk receipts per cwt. milk	\$15.00	\$13.45	\$15.97	\$12.98
<u>Size of Business</u>				
Average number of cows	266	280	297	313
Average number of heifers	202	213	227	241
Milk sold, cwt.	58,746	61,616	65,619	71,158
Worker equivalent <sup>6</sup>	6.63	6.82	7.22	7.54
Total tillable acres	600	622	653	685
<u>Rates of Production</u>				
Milk sold per cow, lbs.	22,055	22,042	22,062	22,713
Hay DM per acre, tons	3.2	3.6	3.0	3.2
Corn silage per acre, tons	16	15	17	15
<u>Labor Efficiency</u>				
Cows per worker <sup>6</sup>	40	41	41	42
Milk sold per worker, lbs. <sup>6</sup>	886,056	903,465	908,847	943,743
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	25%	27%	25%	30%
Dairy feed & crop expense per cwt. milk	\$4.73	\$4.63	\$5.01	\$4.81
Operating cost of producing cwt. milk	\$11.16	\$11.17	\$12.08	\$11.05
Total cost of producing cwt. milk	\$14.15	\$14.20	\$15.24	\$14.19
Hired labor cost per cwt.	\$2.18	\$2.30	\$2.44	\$2.50
Interest paid per cwt.	\$0.77	\$0.93	\$0.81	\$0.60
Labor & machinery costs per cow	\$1,172	\$1,198	\$1,269	\$1,268
<u>Capital Efficiency, Average for Year</u>				
Farm capital per cow	\$6,314	\$6,466	\$6,644	\$6,778
Machinery & equipment per cow	\$1,190	\$1,236	\$1,232	\$1,260
Real estate per cow	\$2,423	\$2,469	\$2,556	\$2,579
Livestock investment per cow	\$1,539	\$1,596	\$1,724	\$1,830
Asset turnover ratio	0.62	0.57	0.65	0.54
<u>Profitability</u>				
Net farm income without appreciation	\$157,528	\$65,901	\$169,588	\$39,146
Net farm income with appreciation	\$189,525	\$113,746	\$268,485	\$84,958
Labor & management income per operator/manager	\$55,882	\$4,359	\$54,294	\$-15,459
Rate return on:				
Equity capital with appreciation	13.4%	5.1%	17.7%	1.8%
All capital with appreciation	10.5%	6.1%	13.1%	3.0%
All capital without appreciation	8.6%	3.5%	8.1%	0.9%
<u>Financial Summary, End Year</u>				
Farm net worth	\$1,031,772	\$1,062,017	\$1,251,478	\$1,235,735
Change in net worth with appreciation	\$98,555	\$36,836	\$180,673	\$-4,863
Debt to asset ratio	0.41	0.43	0.40	0.43
Farm debt per cow	\$2,662	\$2,736	\$2,717	\$2,851
Debt coverage ratio	1.73	0.87	1.70	0.70

<sup>6</sup>Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.

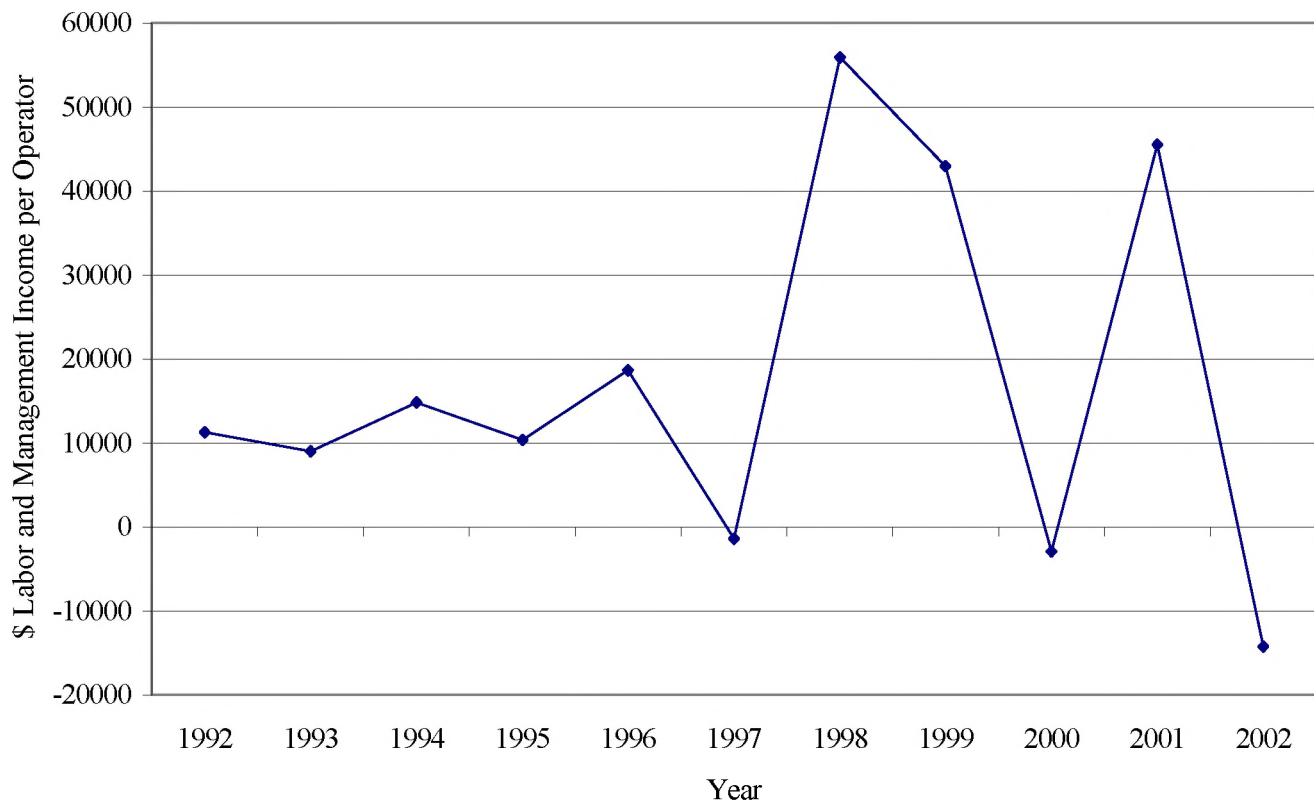
### ADJUSTING PROFIT, PRICE AND COSTS FOR INFLATION

Labor and management income per operator in 1998 was at an all time high when measured in nominal (actual) value (Chart 2). Over the period 1992 to 2002, labor and management incomes per operator did not exceed \$25,000 except for \$55,000 in 1998, nearly \$43,000 in 1999, and over \$45,000 in 2001. The reader is reminded that the average herd size of DFBS participants steadily increased from 123 cows to 297 cows over this period.

**Chart 2.**

#### LABOR AND MANAGEMENT INCOME PER OPERATOR

Dairy Farm Business Summary Farms, 1992-2002

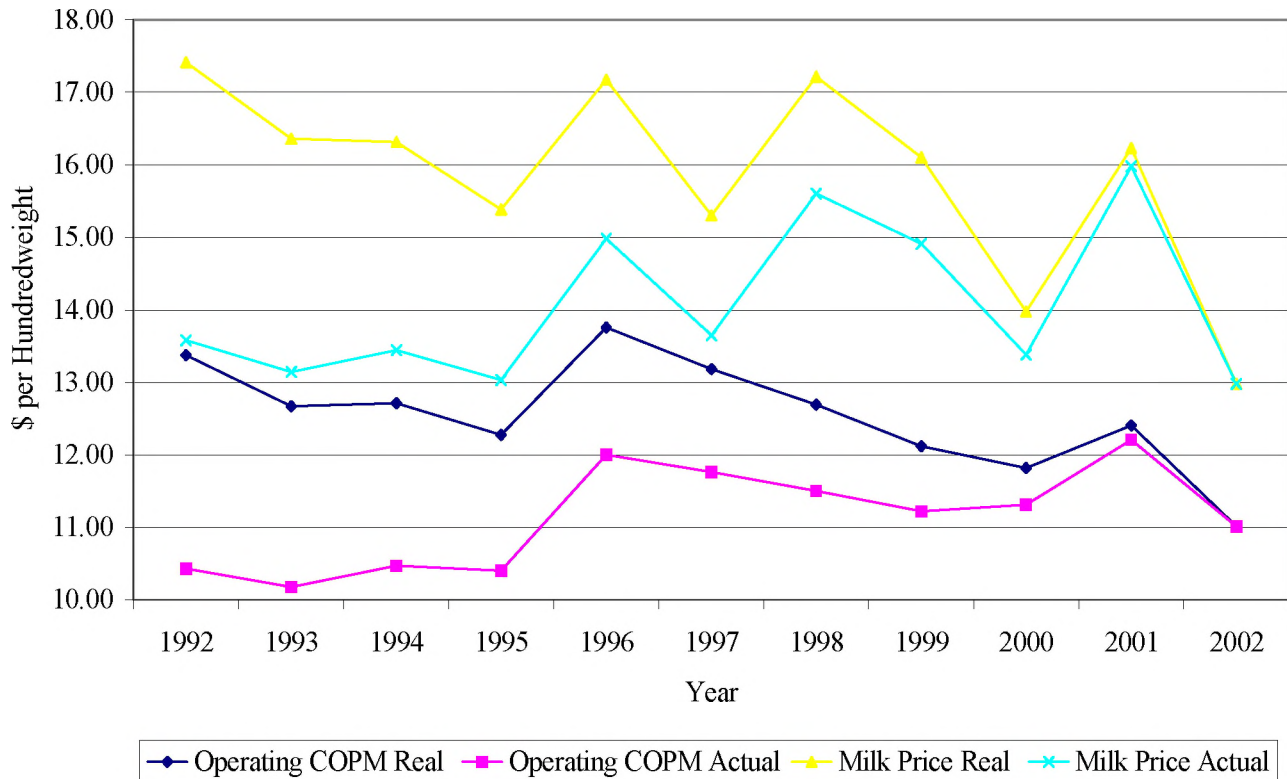


Milk prices in 2002 averaged \$12.98 per hundredweight in actual dollars (Chart 3, page 7). In 1992, milk prices adjusted for inflation, in 2002 dollars, would have been about \$17.41 per hundredweight.

Operating cost of producing milk (actual) had been very constant from 1992 through 1995. Feed costs were higher in 1996 and so were operating costs of producing milk. Operating costs have been trending down in 1996 through 2000, but remain higher than earlier years. Real costs of producing milk per hundredweight have been on a downward trend over this 11-year period.

Chart 3.

**OPERATING COST OF PRODUCING MILK AND MILK PRICE<sup>7</sup>**  
Dairy Farm Business Summary Farms, 1992-2002



<sup>7</sup> Operating COPM and Milk Price are adjusted for inflation, to obtain real values, using the Consumer Price Index–2002 dollars.

### MILK INCOME AND MARKETING EXPENSE BREAKDOWN

Starting January 1<sup>st</sup>, 2000, the Northeast switched to multiple components pricing, which changed the format of the milk check and how farmers received payment for their milk. To examine the breakdown of the gross milk income and the marketing expenses, 122 farms filled out a detailed form including all the different sources of income for milk sales and the milk marketing expenses on an accrual basis. This information is reported in the following two tables. The tables are divided into six different sections, each representing a different area of income or expenses.

The first section looks at the value of the milk components on a per cwt. basis. The second section looks at the Producer Price Differential. The third section looks at the premiums a farm receives. Any premiums not specifically noted as quality or volume related are included in market premiums. The fourth section looks at the expenses associated with marketing milk. A new line item in this section is the expenses associated with utilizing forward contracting or hedging programs to market milk, such as commission or broker fees. The fifth section is income from the compact program or from forward contracting or hedging programs. The sixth section is the patronage dividends or refunds from the milk cooperatives. Equity purchased in the milk cooperative utilizing a monthly deduction from the milk check or a percent of the patronage dividend is treated as a capital purchase and is not a milk marketing expense. The cumulative total for these six sections is the net price received on farms. MILC payments are not included as a milk receipt, but as a government payment.

Table 3 on page 8 reports the averages for these different sections. Table 4 on page 9 contains the quintile averages for each of the individual lines of the report. This table is in farm business chart format with each item sorted independently and ranked by fifths. Numbers for the different sections will not add to the totals for that quintile or to the net price received because each item is sorted independently. This table shows the range of income and expenses received by farms for all the different sections. More milk price information is presented on page 40.

Table 3.

**AVERAGE<sup>8</sup> MILK INCOME AND MARKETING REPORT**  
**122 New York Dairy Farms, 2002**

	Pounds	Percent	Price/Pound	Total	\$/Cwt of Milk
<b>BASE FARM PRICE</b>					
Butterfat	273,825.89	3.73%	\$1.186	\$325,347.65	\$4.43
Protein	220,163.24	3.02%	\$1.950	\$432,700.56	\$5.85
Solids	425,772.20	5.60%	\$0.074	\$25,554.62	<u>\$0.34</u>
Total Component Contribution					<u>\$10.63</u>
<b>PPD</b>	7,485,415.91		\$1.5133	\$103,945.03	<u>\$1.51</u>
<b>Base Farm Price</b>					<u>\$12.14</u>
Premiums					
Quality				\$13,370.19	\$0.15
Volume				\$23,390.19	\$0.21
Market Premiums				\$26,023.65	<u>\$0.23</u>
<b>Total Premiums</b>					<u>\$0.59</u>
<b>BASE FARM PRICE + PREMIUM</b>					<u>\$12.73</u>
<hr style="border-top: 1px dashed black;"/>					
Deductions					
Promo				\$11,229.83	\$0.15
Hauling + Stop Charges.				\$33,153.41	\$0.59
Market Fees & Coop Dues				\$3,716.20	\$0.05
Futures/Contract Fees				\$0.00	<u>\$0.00</u>
<b>Total Deductions</b>					<u>\$0.79</u>
<b>BASE FARM PRICE + PREMIUMS – DEDUCTIONS</b>					<u>\$11.94</u>
Marketing Programs					
Compact				\$121.75	\$0.01
Futures Contracts, Forward Contracting, Etc.				\$14,732.44	<u>\$0.07</u>
<b>Total Marketing Income</b>					<u>\$0.08</u>
<b>Patronage Dividends</b>				\$7,486.69	<u>\$0.12</u>
<b>NET PRICE RECEIVED ON FARM, ALL SOURCES</b>					<u>\$12.14</u>
<hr/>					
<b>PPD – Hauling, per cwt.</b>					\$0.92
<b>PPD – Hauling + Market Premiums, per cwt.</b>					\$1.15

<sup>8</sup>Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals. However, detail in the “\$/Cwt of Milk” column will result in the totals.



Table 4.

**MILK PRICE INFORMATION BY QUINTILE<sup>9</sup>**  
**(Each Category Sorted Independently)**  
**122 New York Dairy Farms, 2002**

	Lowest Quintile	←————→			Highest Quintile
Butterfat, %	3.51	3.64	3.70	3.80	4.04
Protein, %	2.87	2.93	2.98	3.03	3.29
Other Solids, %	5.06	5.67	5.72	5.75	5.85
Butterfat, \$ per Cwt.	4.13	4.32	4.39	4.51	4.81
Protein, \$ per Cwt.	5.55	5.75	5.84	5.93	6.21
Other solids, \$ per Cwt.	0.30	0.33	0.34	0.35	0.41
<b>Total Component Value per Cwt.</b>	<b>\$10.11</b>	<b>\$10.43</b>	<b>\$10.56</b>	<b>\$10.76</b>	<b>\$11.31</b>
PPD, \$ per Cwt.	1.19	1.27	1.44	1.69	1.99
<b>Base Farm Price per Cwt.</b>	<b>\$11.46</b>	<b>\$11.77</b>	<b>\$12.05</b>	<b>\$12.40</b>	<b>\$13.06</b>
Quality, \$ per Cwt.	0.00	0.06	0.14	0.22	0.33
Volume, \$ per Cwt.	0.00	0.03	0.19	0.30	0.57
Market premium, \$ per Cwt.	0.00	0.06	0.14	0.29	0.68
<b>Total Premium, \$ per Cwt.</b>	<b>0.16</b>	<b>0.36</b>	<b>0.53</b>	<b>0.77</b>	<b>1.15</b>
<b>Base Farm Price + Premiums per Cwt.</b>	<b>\$11.95</b>	<b>\$12.44</b>	<b>\$12.70</b>	<b>\$12.96</b>	<b>\$13.65</b>
Promotion, \$ per Cwt.	0.12	0.15	0.15	0.15	0.19
Hauling, \$ per Cwt.	0.30	0.42	0.51	0.69	1.05
Market fees & coop dues per Cwt.	0.00	0.01	0.05	0.07	0.12
Futures/contract fees, \$ per Cwt.	0.00	0.00	0.00	0.00	0.00
<b>Total Marketing Expenses per Cwt.</b>	<b>\$0.49</b>	<b>\$0.61</b>	<b>\$0.72</b>	<b>\$0.89</b>	<b>\$1.26</b>
<b>Base + Premiums – Deductions per Cwt.</b>	<b>\$11.19</b>	<b>\$11.63</b>	<b>\$11.96</b>	<b>\$12.21</b>	<b>\$12.75</b>
Compact, \$ per Cwt.	0.00	0.00	0.00	0.00	0.05
Futures contract, forward contracting, \$ per Cwt.	0.00	0.00	0.00	0.00	0.37
<b>Total Marketing Income, \$ per Cwt.</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.42</b>
<b>Patronage Dividends, \$ per Cwt.</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.05</b>	<b>\$0.55</b>
<b>Net Price Received From All Sources, \$ per Cwt.</b>	<b>\$11.42</b>	<b>\$11.84</b>	<b>\$12.09</b>	<b>\$12.38</b>	<b>\$13.02</b>
<b>PPD - Hauling, \$ per cwt.</b>	<b>0.69</b>	<b>0.83</b>	<b>0.90</b>	<b>1.01</b>	<b>1.20</b>
<b>PPD - Hauling + Market Premiums, \$ per cwt.</b>	<b>0.76</b>	<b>0.95</b>	<b>1.10</b>	<b>1.26</b>	<b>1.71</b>

\*Data for each category are calculated independently of all others. Therefore, summation of individual categories will not equal total categories.

## SUMMARY AND ANALYSIS OF THE FARM BUSINESS

### Business Characteristics and Resources Used

Recognition of important business characteristics and identification of the farm resources used is necessary for evaluating management performance. The combination of resources used and management practices employed is known as farm organization. Important farm business characteristics and the number of farms reporting these characteristics for 2002 are presented in the following table.

**Table 5.**

### BUSINESS CHARACTERISTICS AND RESOURCES USED 219 New York Dairy Farms, 2002

<u>Dairy Livestock (number)</u>	<u>Cows</u>	<u>Heifers</u>	<u>Dairy Records</u>	<u>Number</u>	<u>Percent</u>
Beginning of Year	285	217	Testing Service	171	78
End of Year	298	229	On Farm System	15	7
Average for Year	297	226	Other	3	1
			None	30	14
<u>Type of Business</u>	<u>Number</u>	<u>Percent</u>	<u>bST Usage</u>	<u>Number</u>	<u>Percent</u>
Sole Proprietorship	110	50	Used on <25% of herd	10	5
Partnership	63	29	Used on 25-75% of herd	56	26
Limited Liability Corp	28	13	Used on >75% of herd	47	21
Subchapter S Corp.	14	6	Stopped using in 2002	3	1
Subchapter C Corp	4	2	Not used in 2002	103	47
<u>Barn Type</u>	<u>Number</u>	<u>Percent</u>	<u>Labor Force</u>	<u>Average</u>	<u>Percent</u>
Stanchion	62	28	Operators	23.2	27
Freestall	137	63	Family Paid	5.8	7
Combination	20	9	Family Unpaid	2.6	3
<u>Milking System</u>	<u>Number</u>	<u>Percent</u>	Hired	55.1	63
Bucket & Carry	0	0	Total Months	86.6	100
Dumping Station	3	1			
Pipeline	68	31			
Herringbone Conventional	74	34			
Herringbone Rapid	17	8			
Parallel	42	19			
Parabone	6	3			
Rotary	1	<1			
Other	8	4			
<u>Milking Frequency</u>	<u>Number</u>	<u>Percent</u>	<u>Operators (total = 399)</u>	<u>Average</u>	
2 times per day	140	64	Age	47	
3 times per day	69	32	Education	13 years	
Other	10	4	Estimated Value of		
			Labor & Management	\$58,394	
<u>Business Records</u>	<u>Number</u>	<u>Percent</u>	<u>Farms Reporting</u>	<u>Number</u>	<u>Average</u>
Account Book	42	19	Land Used		
Accounting Service	41	19	Total acres:		
On-Farm Computer	129	59	Owned	219	501
Other	7	3	Rented	206	381
			Tillable acres:		
			Owned	219	323
			Rented	203	365
			Total	219	660

There were 399 full-time operator equivalents on the 219 dairy farms for an average of 1.82 operators per farm. The operators averaged 47 years of age and 13 years of formal education. Additional data on the labor force is in Table 44.

All 219 farm businesses included in this dairy summary own farm real estate. Dairy farm renters are summarized separately later in this publication. However, 203 of the dairy farm owners rented an average of 365 acres of tillable land in 2002. The 219 farms averaged 660 total tillable acres per farm of which 337 acres were rented. Tables 21 and 27 contain additional information on land use and the dairy herd.

## **Accounting Procedures**

Accrual accounting adjustments are made to cash receipts and expenses to accurately measure annual receipts, expenses, and farm profitability. These procedures express the true value and cost of production for the year, regardless of whether cash was received or expended. Cash expenses and cash receipts are used when evaluating the cash flow position of the business.

The accrual accounting adjustments consider changes in accounts payable and receivable, prepaid expenses, and changes in inventory of not only such items as crops and livestock, but also the inventory of production items such as fertilizer, seed and fuel. In this manner, the total cost of production and the total value of production are obtained to provide an accurate representation of profitability in that year.

Accrual adjustments are complemented by accounting procedures used to separate changes in inventory of capital assets into changes caused by price and those caused by quality or quantity changes. Separating price changes (appreciation) from physical changes in the farm inventory are important in determining farm profitability. Appreciation of farm assets is included in the return to farm capital, but excluded from the return to labor and management.

## **Income Statement - Expenses**

The accrual income statement on the following page begins with an accounting of all farm business expenses. Farm business expenditures are grouped into the following nine major categories:

1. Hired labor includes gross wages plus the farm share of social security, workers' compensation insurance, employee health insurance and other employee benefits paid by the farm employer.
2. Feed expenses are divided into purchased dairy grain and concentrate, purchased dairy roughage and all feed purchased for nondairy livestock to allow more thorough analysis of dairy herd feeding costs. The costs of growing grain and roughage are not included in cash and accrual feed expenses.
3. Machinery costs represent all the operating costs of using machinery on the farm. Ownership costs are excluded here but are included in the analysis of machinery costs presented on page 24.
4. Livestock expenses include the cost of supplies and services directly associated with the care and maintenance of the dairy herd, such as breeding, veterinary, bedding, milking supplies and custom boarding expenses plus milk marketing costs. The purchase of replacement cattle is considered a herd maintenance expense while expansion livestock is not.
5. Crop expenses include the costs of fertilizer, lime, seeds, spray and other crop supplies.
6. Real estate expenses are the direct costs associated with owning and maintaining farmland and buildings.
7. Other includes insurance, the farm share of utilities, interest paid on all farm indebtedness and miscellaneous costs.
8. Expansion livestock is purchased dairy cattle and other livestock that cause an increase in herd size from the beginning to the end of the year. It is a nonoperating cost included in total expenses.
9. Depreciation of machinery and buildings are nonoperating costs included in total expenses. Depreciation charges are based on those reported for income tax purposes.

Cash and accrual farm expenses are summarized below. Total operating accrual expenses for the 219 farms averaged \$2,406 per day and 89 percent of total farm accrual expenses.

Table 6.

**CASH AND ACCRUAL FARM EXPENSES**  
**219 New York Dairy Farms, 2002**

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses	Percent
<u>Hired Labor</u>	\$160,734		\$-401 <<		\$21		\$161,155	18
<u>Feed</u>								
Dairy grain & concentrate	234,550		-14,140		5,427		254,117	29
Dairy roughage	16,488		539		1,025		16,975	2
Nondairy livestock	72		2		0		69	<1
<u>Machinery</u>								
Machinery hire, rent & lease	21,707		-256 <<		413		22,376	3
Machinery repairs & farm vehicle exp.	44,004		34		631		44,600	5
Fuel, oil & grease	17,762		-197		402		18,360	2
<u>Livestock</u>								
Replacement livestock	10,414		0 <<		64		10,479	1
Breeding	12,898		-351		357		13,606	2
Veterinary & medicine	36,241		-393		573		37,207	4
Milk marketing	42,977		91 <<		312		43,198	5
Bedding	13,876		-408		158		14,443	2
Milking Supplies	20,334		-405		170		20,909	2
Cattle lease & rent	1,699		0 <<		-8		1,691	<1
Custom boarding	17,549		-247 <<		382		18,178	2
BST expense	15,849		-283 <<		209		16,341	2
Other livestock expense	9,883		-146		416		10,445	1
<u>Crops</u>								
Fertilizer & lime	15,613		-1,104		1,340		18,057	2
Seeds & plants	11,797		-1,678		-57		13,418	2
Spray & other crop expense	13,333		-935		410		14,678	2
<u>Real Estate</u>								
Land, building & fence repair	12,503		-10		13		12,526	1
Taxes	12,991		-25 <<		321		13,337	2
Rent & lease	17,990		134 <<		47		17,903	2
<u>Other</u>								
Insurance	9,902		-264 <<		94		10,261	1
Utilities	22,425		11 <<		9		22,423	3
Interest paid	40,454		-17 <<		-98		40,372	5
Miscellaneous	10,969		-135		58		11,162	1
Total Operating	\$845,014		\$-20,582		\$12,690		\$878,286	100
Expansion livestock	\$14,209		\$0 <<		\$-158		\$14,051	
Machinery depreciation							\$50,250	
Building depreciation							\$41,682	
TOTAL ACCRUAL EXPENSES							\$984,269	

Cash paid is the actual amount of money paid out during the year and does not necessarily represent the cost of goods and services actually used.

Change in inventory represents feeds and supplies purchased this year but not used (positive change), and similar items purchased in a prior year and used this year (negative change). For example, purchased dairy grain and concentrate inventory decreased \$14,140.

Prepaid expenses (noted by << in Table 6) are advance payments made for services and noninventory items to be used in future years. For example, advance payments for rent increased an average of \$134 per farm in 2002, and that increase is subtracted from cash rent to determine the correct 2002 accrual rental expense.

Changes in accounts payable reflect supplies/services used in this year's production but not paid for (positive change), and payments for production inputs used in a prior year (negative change).

Accrual expenses are cash expenses adjusted for changes in inventory, prepaid expenses and accounts payable. They are the total costs of inputs actually used in this year's business. Total change in inventory and prepaid expenses equals \$-20,582, and total change in accounts payable equals \$12,690.

### **Income Statement - Receipts**

Cash and accrual farm receipts are presented in the following table. Total cash receipts averaged \$991,071 per farm. Total accrual receipts averaged \$1,022,454 per farm. Accrual receipts were greater than cash receipts due primarily to dairy herd growth and increases in crop inventory. Cow numbers increased an average of 13 head per farm and the homegrown feed inventory per farm increased \$7,982. Homegrown feed inventory per cow increased \$5 from beginning to end of year.

**Table 7.**

### **CASH AND ACCRUAL FARM RECEIPTS 219 New York Dairy Farms, 2002**

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts	Percent
Milk sales	\$867,132				\$-8,349		\$858,783	84
Dairy cattle	37,815		\$29,031		408		67,254	7
Dairy calves	10,307				-15		10,291	1
Other livestock	1,866		326		4		2,196	<1
Crops	7,722		7,982		-336		15,368	2
Government receipts	46,385		-53 <sup>10</sup>		2,021		48,354	5
Custom machine work	3,419				77		3,496	<1
Gas tax refund	324				-2		321	<1
Other	16,101				290		16,391	2
- Nonfarm noncash Capital <sup>11</sup>			(-) 0				(-) 0	
Total	\$991,071		\$37,286		\$-5,903		\$1,022,454	100

<sup>10</sup>Change in advanced government receipts.

<sup>11</sup>Gifts or inheritances of cattle or crops included in inventory.

Cash receipts include the gross value of milk checks received during the year plus all other payments received for the sale of farm products, services and government programs.

Accrual receipts represent the value of all farm commodities produced and services actually provided by the farmer during the year. Increases in livestock inventory caused by herd growth and/or quality, are included. Decreases in inventory caused by herd reduction are deducted. Changes in inventories of crops grown are included. Changes in advanced government receipts are the amount by which government payments received for participating in a future year's program have changed from 2001 to 2002. An increase requires a negative adjustment to cash receipts while a decrease is a positive adjustment. Changes in accounts receivable include the difference between the January milk check for December 2002 marketings and the previous January's check, and other delayed payments.

Nonfarm noncash capital are gifts and inheritances of cattle and crops received by the farm owner/operator, and included in inventory or used in the business during the year. They are deducted from growth in inventory and reduce accrual receipts because they came from outside the farm business. Gifts and inheritances of machinery and real estate are accounted for in Table 14.

## **Profitability Analysis**

Farm owners/operators contribute labor, management, and capital to their businesses. The best combination of these resources produces optimum profits. Farm profits can be measured as the return to all family resources or as the return to one or more individual resources such as labor and management.

Net farm income is the total combined return to the farm operator(s) and other unpaid family members for their labor, management and equity capital. It is the farm family's net annual return from working, managing, financing and owning the farm business. This is not a measure of cash available from the year's business operation. Cash flow is evaluated later in this report.

Net farm income is computed with and without appreciation. Appreciation represents the change in farm inventory values caused by changes in prices during the year. Appreciation is a major factor contributing to changes in farm net worth and must be included in the profitability analysis. Net appreciation totaled \$44,297 per farm in 2002. On the average, farm real estate appreciated \$38,949 or 5 percent of beginning fair market value. Machinery appreciated 2.8 percent while dairy cattle prices appreciated -1.3 percent in 2002.

Average data from 21 farms with the highest rates of return to all capital (without appreciation) are compared with the 219 farm average in Table 8 and in many of the following tables. Net farm income with appreciation averaged \$302,897 per farm on the top 10 percent farms, 267 percent greater than the 219 farm average.

**Table 8.**

### **NET FARM INCOME 219 New York Dairy Farms, 2002**

Item	Average 219 Farms		Average Top 10% Farms <sup>12</sup>	
	Per Farm	Per Cow	Per Farm	Per Cow
Total accrual receipts	\$1,022,454		\$1,278,955	
+ Appreciation: Livestock	-6,689		5,502	
Machinery	9,734		4,094	
Real Estate	38,949		72,257	
Other Stock & Certificates	<u>2,303</u>		<u>-235</u>	
= Total including appreciation	\$1,066,751		\$ 1,360,573	
- Total accrual expenses	<u>984,269</u>		<u>1,057,676</u>	
= Net Farm Income (with appreciation)	\$82,482	\$279	\$302,897	\$870
Net Farm Income (without appreciation)	\$38,185	\$129	\$221,279	\$636

<sup>12</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

Labor and management income is the part of net farm income without appreciation returned to the operator(s) labor and management. Appreciation is not included as part of the return to labor and management. Labor and management income is determined by deducting the charge for unpaid family labor and the cost of using equity capital at a real interest rate of 5 percent, from net farm income excluding appreciation. The interest charge reflects the long-term average rate of return above inflation that a farmer might expect to earn in comparable risk investments. Operator(s') labor is not included in unpaid family labor.

Labor and management income per operator measures the return to one full-time operator's labor and management. A full-time operator provides 12 months of labor and management.

Table 9.

**LABOR AND MANAGEMENT INCOME**  
**219 New York Dairy Farms, 2002**

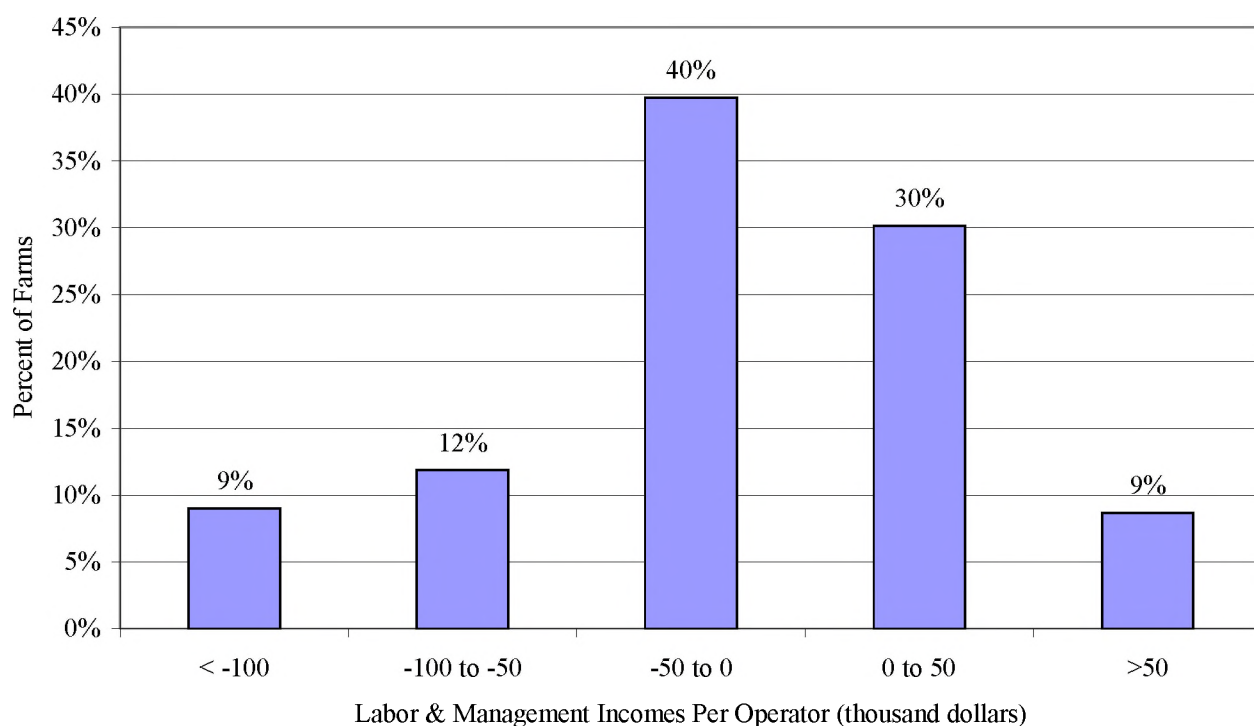
Item	Average 219 Farms	Average Top 10% Farms <sup>13</sup>
Net farm income without appreciation	\$38,185	\$221,279
- Family labor unpaid @ \$2,100 per month	5,460	2,520
- Real interest @ 5% on \$1,172,969 equity capital for average & \$1,483,612 for the top 10% farms	<u>58,648</u>	<u>74,181</u>
= Labor & Management Income (1.82 operators)	\$-25,923	(1.58 operators) \$144,578
Labor & Management Income per Operator	\$-14,243	\$91,505

<sup>13</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

Labor and management income per operator averaged \$-14,243 on these 219 dairy farms in 2002. The range in labor and management income per operator was from less than \$-674,000 to more than \$358,000. Returns to labor and management were negative on 61 percent of the farms. Labor and management income per operator ranged from \$0 to \$50,000 on 30 percent of the farms while 9 percent showed labor and management incomes of \$50,000 or more per operator.

Chart 4.

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR**  
**219 New York Dairy Farms, 2002**



Return to equity capital measures the net return remaining for the farmer's equity or owned capital after a charge has been made for the owner/operator's labor and management and unpaid family labor. The earnings or amount of net farm income allocated to labor and management is the opportunity cost or value of operator(s)' labor and management estimated by the cooperators. Return on equity capital is calculated with and without appreciation. The rate of return on equity capital is determined by dividing the amount returned by the year's average farm net worth or equity capital. Return to all capital is calculated by adding interest paid to the return on equity capital and then dividing by average farm assets to calculate the rate of return on average total capital. Net farm income from operations ratio is net farm income (without appreciation) divided by total accrual receipts.

**Table 10.**

**RETURN TO CAPITAL**  
**219 New York Dairy Farms, 2002**

Item	Average 219 Farms	Average Top 10% Farms <sup>14</sup>
Net farm income with appreciation	\$82,482	\$302,897
- Family labor unpaid at \$2,100 per month	5,460	2,520
- Value of operators' labor & management	<u>58,394</u>	<u>56,952</u>
= Return to equity capital with appreciation	\$18,628	\$243,425
+ Interest paid	<u>40,372</u>	<u>35,324</u>
= Return to all capital with appreciation	\$59,000	\$278,749
Return to equity capital without appreciation	\$-25,669	\$161,807
Return to all capital without appreciation	\$14,703	\$197,131
Rate of return on average equity capital:		
with appreciation	1.6%	16.4%
without appreciation	-2.2%	10.9%
Rate of return on all capital:		
with appreciation	2.9%	12.3%
without appreciation	0.7%	8.7%
Net farm income from operations ratio	0.04	0.17

<sup>14</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

Return to all labor and management is another measure of profitability of a business that can be calculated. It is calculated by adding the charge for unpaid family labor and the hired labor expense to labor and management income. Table 11 shows that farms with higher return to all capital with appreciation also had significantly higher return per hour to all labor and management.

**Table 11.**

**RETURN TO ALL LABOR AND MANAGEMENT BY RETURN  
TO ALL CAPITAL WITH APPRECIATION**  
**219 New York Dairy Farms, 2002**

Item	Quartile by Return to All Capital With Appreciation			
	Lowest 25%	3rd 25%	2nd 25%	Top 25%
Return to all capital with appreciation	\$-76,114	\$-6,159	\$42,300	\$279,946
Rate of return on all capital with appreciation	-4.5%	-0.7%	3.2%	6.7%
Total returns to all labor & management	\$38,786	\$28,101	\$83,320	\$417,594
Worker equivalent	6.48	3.59	5.11	13.80
Return per worker equivalent	\$5,985	\$7,828	\$16,305	\$30,260
Returns/hour (2,760 hours/worker/year)	\$2.17	\$2.84	\$5.91	\$10.96



## Farm and Family Financial Status

Evaluating the financial status of the farm business and the farm family is an important part of business analysis. The first step is to inventory all the assets, determine all liabilities and fill out the balance sheet. The second step is to analyze the complete balance sheet by evaluating the relationships between assets and liabilities and changes made during the year.

**Table 12.**

### **2002 FARM BUSINESS AND NONFARM BALANCE SHEET 219 New York Dairy Farms, 2002**

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$10804	\$11,447	Accounts payable	\$16,956	\$29,487
Accounts receivable	68,105	62,203	Operating debt	68,422	80,016
Prepaid expenses	2,718	1,746	Short term	6,088	3,383
Feed & supplies	<u>206,013</u>	<u>194,385</u>	Advanced gov't. receipt	57	110
Total Current	\$287,640	\$269,781	Current portion:		
			Intermediate	68,594	72,740
			Long term	<u>23,220</u>	<u>28,878</u>
			Total Current	\$183,338	\$214,613
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy Cows:			Structured debt		
owned	\$348,189	\$360,699	1-10 years	\$302,617	\$342,444
leased	2,668	1,468	Financial lease		
Heifers	176,457	186,301	(cattle & machinery)	18,324	13,152
Bulls & other livestock	2,767	3,080	Farm Credit stock	<u>4,680</u>	<u>5,277</u>
Mach. & equip. owned	349,485	372,411	Total Intermediate	\$325,621	\$360,873
Mach. & equip. leased	15,656	11,684			
Farm Credit stock	4,680	5,277	<u>Long Term</u>		
Other stock & certificates	<u>39,526</u>	<u>46,240</u>	Structured debt		
Total Intermediate	\$939,428	\$987,160	≥ 10 years	\$298,079	\$304,955
<u>Long Term</u>			Financial lease		
Land & buildings:			(structures)	<u>1,355</u>	<u>912</u>
owned	\$752,071	\$797,336	Total Long Term	\$299,434	\$305,867
leased	<u>1,355</u>	<u>912</u>			
Total Long Term	\$753,426	\$798,248	Total Farm Liabilities	\$808,393	\$881,353
Total Farm Assets	\$1,980,494	\$2,055,189	FARM NET WORTH	\$1,172,101	\$1,173,836
Nonfarm Assets <sup>15</sup>	Jan.1	Dec. 31	Nonfarm Liabilities <sup>15</sup> & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$5,666	\$5,600	Nonfarm Liabilities	\$4,319	\$4,592
Cash value life insurance	18,360	19,535	NONFARM NET WORTH	\$99,784	\$102,594
Nonfarm real estate	29,791	31,091			
Auto (personal share)	6,579	6,376	FARM & NONFARM <sup>16</sup>	Jan. 1	Dec. 31
Stocks & bonds	24,456	23,251	Total Assets	\$2,084,597	\$2,162,375
Household furnishings	8,652	8,576	Total Liabilities	<u>812,712</u>	<u>885,945</u>
All other	<u>10,599</u>	<u>12,757</u>	TOTAL FARM & NON-		
Total Nonfarm	\$104,103	\$107,186	FARM NET WORTH	\$1,271,885	\$1,276,430

<sup>15</sup>Average of 122 farms completing the nonfarm balance sheet.

<sup>16</sup>Sum of average farm values for 219 farms and nonfarm values for 122 farms.

Financial lease obligations are included in the balance sheet. The present values of all future payments are listed as liabilities since the farmer (lessee) is committed to make the payments. The present values are also listed as assets, representing the future value the item has to the business.

The farm balance sheet analysis includes financial and debt ratios and factors measuring levels of debt. Percent equity is calculated by dividing farm net worth by farm assets. Equity increases as the value of assets increase more than liabilities. The debt to asset ratios reflect strength in solvency and the potential capacity to borrow. The debt analysis ratios show how well the debt is structured and managed. Debt levels per unit of productive capacity include some old standards that are still useful if used with measures of cash flow and repayment ability.

**Table 13.**

**FARM BALANCE SHEET ANALYSIS**  
**219 New York Dairy Farms, 2002**

Item	Average 219 Farms		Average Top 10% Farms <sup>17</sup>	
<u>Farm Financial Ratios:</u>				
Percent equity		57%		65%
Debt/asset ratio: total		0.43		0.35
long term		0.38		0.33
intermediate & current		0.46		0.36
Leverage Ratio:		0.75		0.53
Current Ratio:		1.26		1.57
Working Capital: Dollars as % of Total Expenses	\$55,168	6%	\$153,693	15%
<u>Farm Debt Analysis:</u>				
Accounts payable as % of total debt		3%		1%
Long term liabilities as % of total debt		35%		31%
Current & intermediate liabilities as % of total debt		65%		69%
Cost of term debt (weighted average)		4.7%		5.5%
<u>Farm Debt Levels:</u>				
	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>
Total farm debt	\$2,899	\$2,729	\$2,273	\$2,675
Long term debt	1,006	947	706	831
Intermediate & long term	2,193	2,064	1,535	1,806
Intermediate & current debt	1,893	1,782	1,567	1,844

<sup>17</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

The farm inventory balance accounts for the changes in the values of major farm assets from the beginning to the end of the year.

**Table 14.**

**FARM INVENTORY BALANCE**  
**219 New York Dairy Farms, 2002**

Item	Real Estate		Machinery & Equipment		Livestock
Value beginning of year		\$752,071		\$349,485	\$527,412
Purchases	\$79,331 <sup>18</sup>		\$65,984		
+ nonfarm noncash transfer <sup>19</sup>	74		203		
- Lost capital	26,029				
- Net sales	5,377		2,746		
- Depreciation	<u>41,682</u>		<u>50,250</u>		
= Net Investment		6,316		13,192	29,357
+ Appreciation		<u>38,949</u>		<u>9,734</u>	<u>-6,689</u>
Value end of year		\$797,336		\$372,411	\$550,080

<sup>18</sup> \$14,455 land and \$64,876 buildings and/or depreciable improvements.

<sup>19</sup> Gifts and inheritances of property transferred into the farm business from outside.

The Statement of Owner Equity has two purposes. It allows (1) verification that the accrual income statement and market value balance sheet are consistent (in accountants' terms they reconcile) and (2) identification of the causes of change in equity that occurred on the farm during the year. The Statement of Owner Equity allows the farmer to determine to what degree the changes in equity were caused by (1) earning from the business, and nonfarm income, (in excess of withdrawals) being retained in the business (retained earnings), (2) outside capital being invested in the business or farm capital being removed from the business (called contributed/withdrawn capital) and (3) increases or decreases in the value (price) of assets owned by the business (called change in valuation equity).

Retained earnings are an excellent indicator of farm generated financial progress.

**Table 15.**

**STATEMENT OF OWNER EQUITY (RECONCILIATION)  
219 New York Dairy Farms, 2002**

Item	Average 219 Farms	Average Top 10% Farms <sup>21</sup>
Beginning of year farm net worth	\$1,172,101	\$1,400,304
Net farm income without appreciation	\$38,185	\$221,279
+ Nonfarm cash income	5,840	8,775
- Personal withdrawals & family expenditures and income taxes, excluding nonfarm borrowings	<u>68,707</u>	<u>106,159</u>
RETAINED EARNINGS	+ \$-24,682	+ \$123,895
Nonfarm noncash transfers to farm	\$277	\$182
+ Cash used in business from nonfarm capital	7,848	3,483
- Note or mortgage from farm real estate sold (nonfarm)	<u>305</u>	<u>0</u>
CONTRIBUTED/WITHDRAWN CAPITAL	+ \$7,820	+ \$3,665
Appreciation	\$44,297	\$ 81,618
- Lost capital	<u>26,029</u>	<u>37,407</u>
CHANGE IN VALUATION EQUITY	+ \$18,268	+ \$44,211
IMBALANCE/ERROR	- \$-329	- \$ 5,156
End of year farm net worth <sup>20</sup>	\$1,173,836	\$1,566,919
<u>Change in Net Worth</u>		
Without appreciation	\$-42,562	\$84,997
With appreciation	\$1,735	\$166,615

<sup>20</sup>May not add due to rounding.

<sup>21</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

### Cash Flow Summary and Analysis

Completing an annual cash flow statement is an important step in understanding and organizing the sources and uses of funds for the business. Understanding last year's cash flow is the first step toward planning and managing cash flow for the current and future years.

The annual cash flow statement is structured to show net cash provided by operating activities, investing activities, financing activities and from reserves. All cash inflows and outflows including beginning and end balances are included. Therefore the sum of net cash provided from all four activities should be zero. Any imbalance is the error from incorrect accounting of cash inflows/outflows.

**Table 16.**

#### **ANNUAL CASH FLOW STATEMENT 219 New York Dairy Farms, 2002**

Item	Average 219 Farms		
<u>Cash Flow from Operating Activities</u>			
Cash farm receipts	\$ 991,071		
- Cash farm expenses	<u>845,014</u>		
= Net cash farm income		\$146,057	
Personal withdrawals & family expenses			
including nonfarm debt payments	\$69,456		
- Nonfarm income	<u>5,840</u>		
- Net cash withdrawals from the farm		<u>\$63,616</u>	
= Net Provided by Operating Activities			\$82,441
<u>Cash Flow From Investing Activities</u>			
Sale of assets:			
machinery	\$2,746		
+ real estate	5,073		
+ other stock & certificates	<u>1,419</u>		
= Total asset sales		\$9,238	
Capital purchases:			
expansion livestock	\$14,209		
+ machinery	65,984		
+ real estate	79,331		
+ other stock & certificates	<u>5,830</u>		
- Total invested in farm assets		<u>\$165,354</u>	
+ Net Provided by Investment Activities			\$-156,116
<u>Cash Flow From Financing Activities</u>			
Money borrowed (intermediate & long term)	\$153,496		
+ Money borrowed (short term)	720		
+ Increase in operating debt	11,594		
+ Cash from nonfarm capital used in business	7,848		
+ Money borrowed - nonfarm	<u>749</u>		
= Cash inflow from financing		\$174,407	
Principal payments (intermediate & long term)	\$96,987		
+ Principal payments (short term)	3,425		
+ Decrease in operating debt	<u>0</u>		
- Cash outflow for financing		<u>\$100,412</u>	
= Net Provided by Financing Activities			\$73,995
<u>Cash Flow From Reserves</u>			
Beginning farm cash, checking & savings		\$10,804	
- Ending farm cash, checking & savings		<u>\$11,447</u>	
= Net Provided from Reserves			\$-643
<u>Imbalance (error)</u>			\$-323

Table 17.

**ANNUAL CASH FLOW DATA**  
**219 New York Dairy Farms, 2002**

Item	Average 219 Farms			Average Top 10% Farms <sup>23</sup>		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Average number of cows and cwt. milk		297	66,177		348	78,852
<u>Accrual Operating Receipts</u>						
Milk	\$858,783	\$2,892	\$12.98	\$1,038,913	\$2,985	\$13.18
Dairy cattle	67,254	226	1.02	107,311	308	1.36
Dairy calves	10,291	35	0.16	14,441	41	0.18
Other livestock	2,196	7	0.03	1,325	4	0.02
Crops	15,368	52	0.23	29,976	86	0.38
Miscellaneous receipts	68,562	231	1.04	86,989	250	1.10
Total	\$1,022,454	\$3,443	\$15.45	\$1,278,955	\$3,675	\$16.22
<u>Accrual Operating Expenses</u>						
Hired labor	\$161,155	\$543	\$2.44	\$192,161	\$552	\$2.44
Dairy grain & concentrate	254,117	856	3.84	281,284	808	3.57
Dairy roughage	16,975	57	0.26	23,040	66	0.29
Nondairy feed	69	0	0.00	25	0	0.00
Machinery hire, rent & lease	22,376	75	0.34	22,215	64	0.28
Machinery repairs & vehicle expense	44,600	150	0.67	49,035	141	0.62
Fuel, oil & grease	18,360	62	0.28	18,037	52	0.23
Replacement livestock	10,479	35	0.16	23,439	67	0.30
Breeding	13,606	46	0.21	19,555	56	0.25
Vet & medicine	37,207	125	0.56	39,332	113	0.50
Milk marketing	43,198	145	0.65	46,842	135	0.59
Bedding	14,443	49	0.22	11,677	34	0.15
Milking supplies	20,909	70	0.32	22,590	65	0.29
Cattle lease	1,691	6	0.03	965	3	0.01
Custom boarding	18,178	61	0.27	10,486	30	0.13
bST expense	16,341	55	0.25	15,180	44	0.19
Other livestock expense	10,445	35	0.16	8,547	25	0.11
Fertilizer & lime	18,057	61	0.27	17,419	50	0.22
Seeds & plants	13,418	45	0.20	12,197	35	0.15
Spray/other crop expense	14,678	49	0.22	10,841	31	0.14
Land, building & fence repair	12,526	42	0.19	17,596	51	0.22
Taxes	13,337	45	0.20	10,990	32	0.14
Real estate rent & lease	17,903	60	0.27	21,334	61	0.27
Insurance	10,261	35	0.16	8,020	23	0.10
Utilities	22,423	75	0.34	21,762	63	0.28
Miscellaneous	11,162	38	0.17	9,242	27	0.12
Total Less Interest Paid	\$837,914	\$2,821	\$12.66	\$913,812	\$2,626	\$11.59
<u>Net Accrual Operating Income</u>						
(without interest paid)	\$184,540	\$621	\$2.79	\$365,143	\$1,049	\$4.63
- Change in livestock & crop inventory	37,286	126	0.56	83,110	239	1.05
- Change in accounts receivable	-5,903	-20	-0.09	1,881	5	0.02
- Change in feed & supply inventory	-20,582	-69	-0.31	29,928	86	0.38
+ Change in accounts payable <sup>22</sup>	12,788	43	0.19	7,483	22	0.09
NET CASH FLOW	\$186,511	\$628	\$2.82	\$257,705	\$741	\$3.27
- Net personal withdrawals & family exp.	62,867	212	0.95	97,384	280	1.24
Available for Farm Debt Payments & Invest.	\$123,644	\$416	\$1.87	\$160,321	\$461	\$2.03
- Farm debt payments	138,323	466	2.09	120,134	345	1.52
Cash available for Farm Investments	\$-14,679	\$-49	\$-0.22	\$40,187	\$115	\$0.51

<sup>22</sup>Exclude change in interest account payable.<sup>23</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

### Repayment Analysis

The second step in cash flow planning and management is to compare and evaluate debt payments planned and made last year, and estimate the payments required in the current year. It is helpful to compare and evaluate a farm's repayment position by using debt payments per unit of production and receipt/debt payment ratios. The data below are from farms that completed summaries for both 2001 and 2002.

**Table 18.**

#### FARM DEBT PAYMENTS PLANNED Same 180 New York Dairy Farms, 2001 & 2002

Debt Payments	Same 180 Dairy Farms			Same 17 Top 10% Farms		
	2002 Payments		Planned 2003	2002 Payments		Planned 2003
	Planned	Made		Planned	Made	
Long term	\$46,721	\$52,915	\$50,443	\$30,112	\$31,137	\$37,516
Intermediate term	99,885	87,320	96,498	86,815	72,391	78,363
Short term	4,118	3,828	2,272	1,006	3,027	282
Operating (net reduction)	5,261	0	13,590	7,722	0	52,779
Accts. payable (net reduction)	231	0	3,928	0	0	126
Total	\$156,216	\$144,063	\$166,731	\$125,655	\$106,555	\$169,066
Per cow	\$506	\$466		\$373	\$316	
Per cwt. 2002 milk	\$2.25	\$2.08		\$1.64	\$1.39	
% of 2002 milk receipts	17%	16%		12%	11%	

The cash flow coverage ratio and debt coverage ratio measure the ability of the farm business to meet its planned debt payments. Debt coverage ratio indicates the income generated to make payments while cash flow coverage ratio shows the cash available to make payments.

**Table 19.**

#### COVERAGE RATIOS Same 180 New York Dairy Farms, 2001 & 2002

Item	Average	Item	Average
<u>Cash Flow Coverage Ratio</u>		<u>Debt Coverage Ratio</u>	
Cash farm receipts	\$1,038,757	Net farm income (without apprec.)	\$ 37,983
- Cash farm expenses	882,181	+ Depreciation	97,972
+ Interest paid (cash)	42,332	+ Interest paid (accrual)	42,233
- Net personal withdrawals from farm <sup>24</sup>	<u>68,441</u>	- Net personal withdrawals from farm <sup>24</sup>	<u>68,441</u>
(A) = Amount Available for Debt Service	\$130,467	(A') = Repayment Capacity	\$109,747
(B) = Debt Payments Planned for 2002 (as of December 31, 2001)	\$156,216	(B) = Debt Payments Planned for 2002 (as of December 31, 2001)	\$156,216
(A/B) = Cash Flow Coverage Ratio for 2002	0.84	(A'/B) = Debt Coverage Ratio for 2002	0.70
Same 17 Top 10% Dairy Farms, 2001 & 2002			
(A) = Amount Available for Debt Service	\$144,067	(A') = Repayment Capacity	\$190,678
(B) = Debt Payments Planned for 2002	125,655	(B) = Debt Payments Planned for 2002	125,655
(A/B) = Cash Flow Coverage Ratio for 2002	1.15	(A'/B) = Debt Coverage Ratio for 2002	1.52

<sup>24</sup>Personal withdrawals and family expenditures less nonfarm income and nonfarm money borrowed. If excluded, the coverage ratios will represent repayment ability of the farm only.

The debt to asset ratio is a good measure of the current relationship between assets and liabilities, but not the business' ability to meet cash flow obligations. Even with a debt to asset ratio of less than 40 percent, 30 percent of the farms had a cash flow coverage ratio less than 1.0.

**Table 20.**

#### DEBT TO ASSET RATIO VS. CASH FLOW COVERAGE 180 New York Dairy Farms, 2002

Debt/Asset Ratio	Cash Flow Coverage Ratio (Farm & Nonfarm)			
	<.5	.5 to .99	1 to 1.49	>=1.5
	percent of farms			
<40%	11.7	18.3	9.4	16.1
40 to 70%	9.4	20.0	6.7	3.3
70% & over	1.1	1.7	2.2	0.0

### **Cropping Program Analysis**

The cropping program is an important part of the dairy farm business that sometimes is overlooked and neglected. A complete evaluation of available land resources, how they are being used, how well crops are produced and what it costs to produce them, is required to evaluate alternative cropping and feed purchase choices.

**Table 21.**

#### **LAND RESOURCES AND CROP PRODUCTION 219 New York Dairy Farms, 2002**

Item	Average 219 Farms			Average Top 10% Farms <sup>25</sup>		
	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
<u>Land</u>						
Tillable	323	337	660	311	470	781
Nontillable pasture	48	14	62	54	7	61
Other nontillable	<u>131</u>	<u>7</u>	<u>138</u>	<u>174</u>	<u>7</u>	<u>182</u>
Total	501	359	860	539	484	1,023
<u>Crop Yields</u>	<u>Farms</u>	<u>Acres</u>	<u>Prod/Acre</u>	<u>Farms</u>	<u>Acres</u>	<u>Prod/Acre</u>
Hay crop	213	332	3.1 tn DM	20	429	3.9 tn DM
Corn silage	193	263	15.5 tn 5.1 tn DM	18	318	19.4 tn 6.7 tn DM
Other forage	20	41	2.3 tn DM	0	0	0.0 tn DM
Total forage	213	574	4.0 tn DM	20	717	5.0 tn DM
Corn grain	61	135	105 bu	6	122	124 bu
Oats	13	33	54 bu	2	30	49 bu
Wheat	25	69	58 bu	0	0	0 bu
Other crops	37	74		4	82	
Tillable pasture	52	68		7	88	
Idle	74	73		5	55	

<sup>25</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

Crop acres and yields are the average for the farms reporting each crop. All but 6 of the 219 farms produced hay or hay crop silage in 2002. Eighty-eight percent produced corn silage, 28 percent grew and harvested corn grain, and 6 percent grew oats for grain. Although 52 farms used tillable pasture in 2002, only 29 farms reported using rotational grazing.

Yields of forage crops have been converted to tons of dry matter using dry matter coefficients reported by the farmers. Grain production has been converted to bushels of dry grain equivalent.

Crop acres represent planted acres, therefore, any unharvested acres are reflected in lower yields per acre.

The following measures of crop management indicate how effectively the land resource is being used and how well total forage requirements are being met.

**Table 22.**

#### **CROP MANAGEMENT FACTORS 219 New York Dairy Farms, 2002**

Item	Average 219 Farms	Average Top 10% Farms <sup>26</sup>
Total tillable acres per cow	2.22	2.24
Total forage acres per cow	1.88	1.96
Harvested forage dry matter, tons per cow	7.45	9.78

<sup>26</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

Forty cooperators allocated direct crop related expenses to hay crop, corn and other crop production, and four provided data on pasture costs. The data in Table 23 have been compiled to show the average crop related production expenses per acre and per unit for these crops and for pasture. Note that labor and machinery costs have not been included. Total corn expenses are allocated to corn silage and corn grain based on the proportion of acres in each crop. In Table 23, the total per tillable acre represents all 219 farms, the expenses for hay are for 40 farms and corn crops are for 37 farms.

**Table 23.**

**CROP RELATED ACCRUAL EXPENSES**  
**New York Dairy Farms, 2002**

Expenses	Average 219 Farms  Total per Tillable Acre	Farms Reporting Crop Costs						
		Average 40 Farms		Average 37 Farms			Average 4 Farms	
		Hay Crop		All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Shell Bu.	Pasture	
		Per Acre	Per Ton DM				Per Till. Acre	Per Total Acre
		Fertilizer & lime	\$27.36	\$18.55	\$5.56	\$29.83	\$5.66	\$0.25
Seeds & plants	20.33	11.89	3.57	34.30	6.51	0.29	6.50	1.68
Spray & other crop exp.	<u>22.24</u>	<u>6.88</u>	<u>2.06</u>	<u>40.25</u>	<u>7.64</u>	<u>0.33</u>	<u>0.00</u>	<u>0.00</u>
Total	\$69.93	\$37.32	\$11.19	\$104.38	\$19.81	\$0.87	\$32.64	\$8.45
Ave. Top 10% Farms: <sup>27</sup>	Average 21 Farms	Average 5 Farms		Average 5 Farms			--None Reported--	
Fertilizer & lime	\$22.30	\$9.16	\$2.05	\$32.97	\$6.14	\$0.24		
Seeds & plants	15.62	11.83	2.65	23.90	4.45	0.17		
Spray & other crop exp.	<u>13.88</u>	<u>4.60</u>	<u>1.03</u>	<u>46.13</u>	<u>8.60</u>	<u>0.33</u>		
Total	\$51.80	\$25.59	\$5.73	\$103.00	\$19.19	\$0.74		

<sup>27</sup> Average of farms with highest rates of return to all capital (without appreciation).

Most machinery costs are associated with crop production and should be analyzed with the crop enterprise. Total machinery expenses include the major fixed costs (interest and depreciation), as well as the accrual operating costs. Machinery costs have not been allocated to individual crops, but they are calculated per total tillable acre.

**Table 24.**

**ACCRUAL MACHINERY EXPENSES**  
**219 New York Dairy Farms, 2002**

Machinery Expense Item	Average 219 Farms		Average Top 10% Farms <sup>28</sup>	
	Total Expenses	Per Tillable Acre	Total Expenses	Per Tillable Acre
Fuel, oil & grease	\$18,360	\$27.82	\$18,037	\$23.09
Machinery repairs & vehicle expense	44,600	67.58	49,035	62.78
Machine hire, rent & lease	22,376	33.90	22,215	28.44
Interest (5%)	18,731	28.38	22,319	28.58
Depreciation	<u>50,250</u>	<u>76.14</u>	<u>45,446</u>	<u>58.19</u>
Total	\$154,317	\$233.81	\$157,052	\$201.09

<sup>28</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).



Table 25.

**CROP RELATED ACCRUAL EXPENSES BY HAY CROP PRODUCTION PER ACRE**  
**40 New York Dairy Farms, 2002**

Item	Tons of Hay Crop Dry Matter Per Acre			
	<2.5	2.5-2.9	3.0-3.4	≥3.5
Hay crop, tons DM/acre	1.8	2.8	3.2	4.6
Farms reporting crop expense breakdowns	10	13	5	12
Average number hay crop acres for farms reporting	279	191	505	364
<u>Accrual Crop Expenses</u>				
<u>Per Acre of Hay Crop:</u>				
Fertilizer & lime	\$11.65	\$17.49	\$27.87	\$18.15
Seeds & plants	9.54	7.47	12.54	15.52
Spray & other crop expenses	<u>1.90</u>	<u>4.20</u>	<u>5.29</u>	<u>12.50</u>
Total	\$23.09	\$29.16	\$45.70	\$46.17
<u>Accrual Crop Expense</u>				
<u>Per Ton DM of Hay Crop:</u>				
Fertilizer & lime	\$7.78	\$3.72	\$10.49	\$3.33
Seeds & plants	6.37	1.59	4.72	2.85
Spray & other crop expenses	<u>1.27</u>	<u>0.89</u>	<u>1.99</u>	<u>2.30</u>
Total	\$15.42	\$6.20	\$17.20	\$8.48

Table 26.

**CROP RELATED ACCRUAL EXPENSES BY CORN PRODUCTION PER ACRE**  
**37 New York Dairy Farms, 2002**

Item	Tons Corn Silage/Acre			Dry Shelled Bushels of Corn Grain Per Acre		
	<13	13-18	≥18	<100	100-120	≥120
Corn yield per acre	10.5	15.5	22.7	76	104	136
Farms reporting crop expense breakdowns	12	17	8	6	4	5
Average number corn acres for farms reporting	160	363	267	146	196	404
<u>Accrual Crop Expense/Acre of Corn</u>						
Fertilizer & lime	\$32.27	\$27.87	\$33.47	\$36.26	\$24.70	\$39.92
Seeds & plants	30.26	33.96	39.14	35.16	27.76	26.25
Spray & other crop expenses	<u>33.84</u>	<u>41.12</u>	<u>43.74</u>	<u>36.57</u>	<u>29.02</u>	<u>42.83</u>
Total	\$96.37	\$102.95	\$116.35	\$107.99	\$81.48	\$109.00
<u>Accrual Crop Expense Per:<sup>29</sup></u>						
	Ton DM of Corn Silage			Dry Shell Bushel of Corn Grain		
Fertilizer & lime	\$9.36	\$5.10	\$5.27	\$0.44	\$0.23	\$0.28
Seeds & plants	5.95	6.21	6.16	0.43	0.26	0.18
Spray & other crop expense	<u>9.82</u>	<u>7.52</u>	<u>6.88</u>	<u>0.44</u>	<u>0.27</u>	<u>0.30</u>
Total	\$27.96	\$18.83	\$18.31	\$1.31	\$0.76	\$0.76

<sup>29</sup>Total corn expenses are allocated to corn silage and corn grain based on the proportion of acres in each crop.

It is important to observe that as hay crop yields per acre increase, crop related expenses per acre also increase. Hay crop expenses per ton of dry matter varied as yields increased. However, the highest cost per ton of dry matter is reported for the 3.0 to 3.4 tons per dry matter yield. For corn silage, crop expense per ton of dry matter is lowest at the high level of production. Corn grain shows the highest cost per acre for the high yield, with the middle and high yield categories producing the lowest cost per bushel. A limited number of cooperators providing data by crop limits the strengths of these conclusions.

### Dairy Program Analysis

An analysis of the dairy enterprise can be the most important step in evaluating the strengths and weaknesses of the dairy farm business. Changes in dairy herd size and market values are identified in the table below. The change in inventory value without appreciation is attributed to physical changes in herd size and quality. This change in inventory is included as an accrual farm receipt when calculating profitability.

**Table 27.**

#### **DAIRY HERD INVENTORY 219 New York Dairy Farms, 2002**

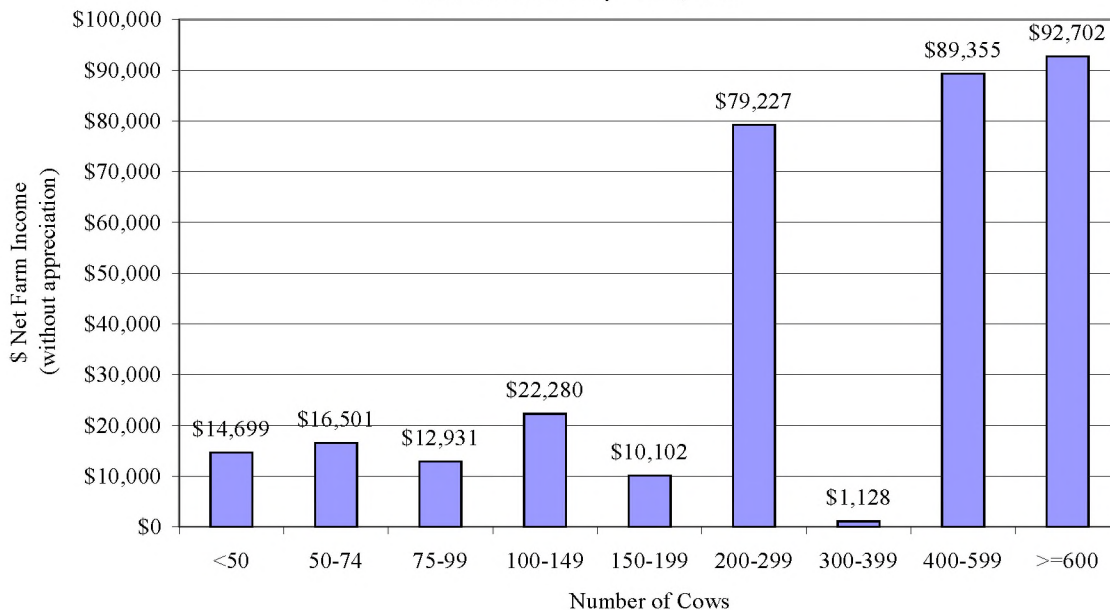
Item	Dairy Cows		Heifers					
	No.	Value	Bred		Open		Calves	
			No.	Value	No.	Value	No.	Value
Beg. year (owned)	285	\$348,189	78	\$92,961	75	\$55,920	64	\$27,576
+ Change w/o apprec.		16,485		8,045		3,745		756
+ Appreciation		<u>-3,975</u>		<u>-1,812</u>		<u>-695</u>		<u>-195</u>
End year (owned)	298	\$360,699	84	\$99,194	80	\$58,970	65	\$28,137
End including leased	304							
Average number	297		226	(all age groups)				
<u>Average Top 10% Farms.<sup>30</sup></u>								
Beg. year (owned)	329	\$394,016	87	\$96,448	78	\$57,072	77	\$31,137
+ Change w/o apprec.		41,723		8,346		8,186		-66
+ Appreciation		<u>3,596</u>		<u>2,469</u>		<u>-813</u>		<u>253</u>
End year (owned)	362	\$439,335	92	\$107,263	88	\$64,445	77	\$31,324
End including leased	366							
Average number	348		258	(all age groups)				

<sup>30</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

Historically, there has been a strong relationship between farm size and net farm income on well-managed dairy farms. In 2002, however, there was not a consistent increase in net farm incomes as herd size increased (Chart 5). Herds less than 200 cows had net farm incomes between 10 and 20 thousand dollars. Larger farms had larger incomes, except for the 300 to 399 category. This herd size group was unable to control costs to the same extent as the other large herds. For more information on herd size comparisons, see pages 48-57.

**Chart 5.**

#### **NET FARM INCOME (WITHOUT APPRECIATION) BY HERD SIZE 219 New York Dairy Farms, 2002**



Total milk sold and milk sold per cow are extremely valuable measures of productivity on the dairy farm. These measures of milk output are based on pounds of milk marketed during the year.

**Table 28.**

**MILK PRODUCTION**  
**219 New York Dairy Farms, 2002**

Item	Average 219 Farms	Average Top 10% Farms <sup>31</sup>
Total milk sold, lbs.	6,617,727	7,885,192
Milk sold per cow, lbs.	22,312	22,683
Average milk plant test, percent butterfat	3.71%	3.64%

<sup>31</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

Farms with higher rates of production tend to have higher net farm income. This was due to more cows per farm and not higher net farm income per cow. However, in 2002, even with higher milk production per cow and more cows, labor and management income per operator did not increase.

**Table 29.**

**MILK SOLD PER COW AND FARM INCOME MEASURES**  
**219 New York Dairy Farms, 2002**

Pounds of Milk Sold Per Cow	Number of Farms	Average Number of Cows	Net Farm Income without Apprec.	Net Farm Income Per Cow	Labor & Management Income/Oper.
Under 16,000	33	114	\$11,401	\$100	\$-17,294
16,000 to 16,999	10	111	45,870	413	1,070
17,000 to 17,999	13	131	9,652	74	-11,576
18,000 to 18,999	11	129	-15,321	-119	-24,925
19,000 to 19,999	15	161	15,853	98	-16,371
20,000 to 20,999	19	166	50,773	306	446
21,000 to 21,999	30	360	58,177	162	-6,401
22,000 to 22,999	25	341	7,123	21	-31,137
23,000 to 23,999	29	498	81,120	163	-6,041
24,000 & over	34	518	61,530	119	-22,318

The relationship between milk output per cow and net farm income on all dairy farms is shown in Table 29 above and is diagrammed in Charts 6 and 7 on page 28. Each spot on each scatter diagram represents one of the 219 farms.

Historically, net farm income per cow has increased as pounds of milk sold per cow increased. This relationship did not hold in 2002. With lower milk prices, controlling costs became the most important determinant of profitability. See Table 29 and Charts 6 and 7.

The trend lines on charts on the following pages were completed using regression techniques. The predictive formulas and  $R^2$  are presented for each relationship. An  $R^2$  of 1.00 indicates a perfect relationship between the data and the trend line. An  $R^2$  of .30 for example, is interpreted as the trend line explaining 30% of the variability in the relationship. The higher the  $R^2$ , the better the trend line fits the data. With a low  $R^2$ , other factors, not measured, are important in explaining the relationship.

Chart 6.

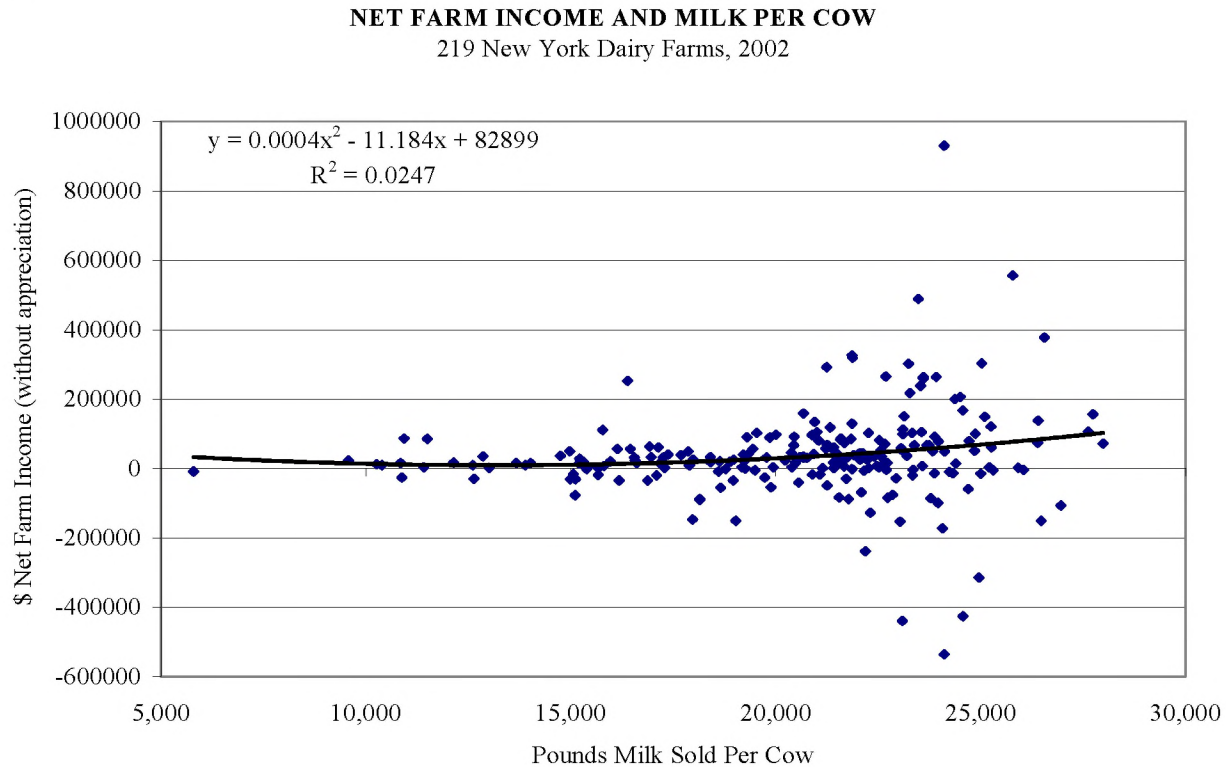
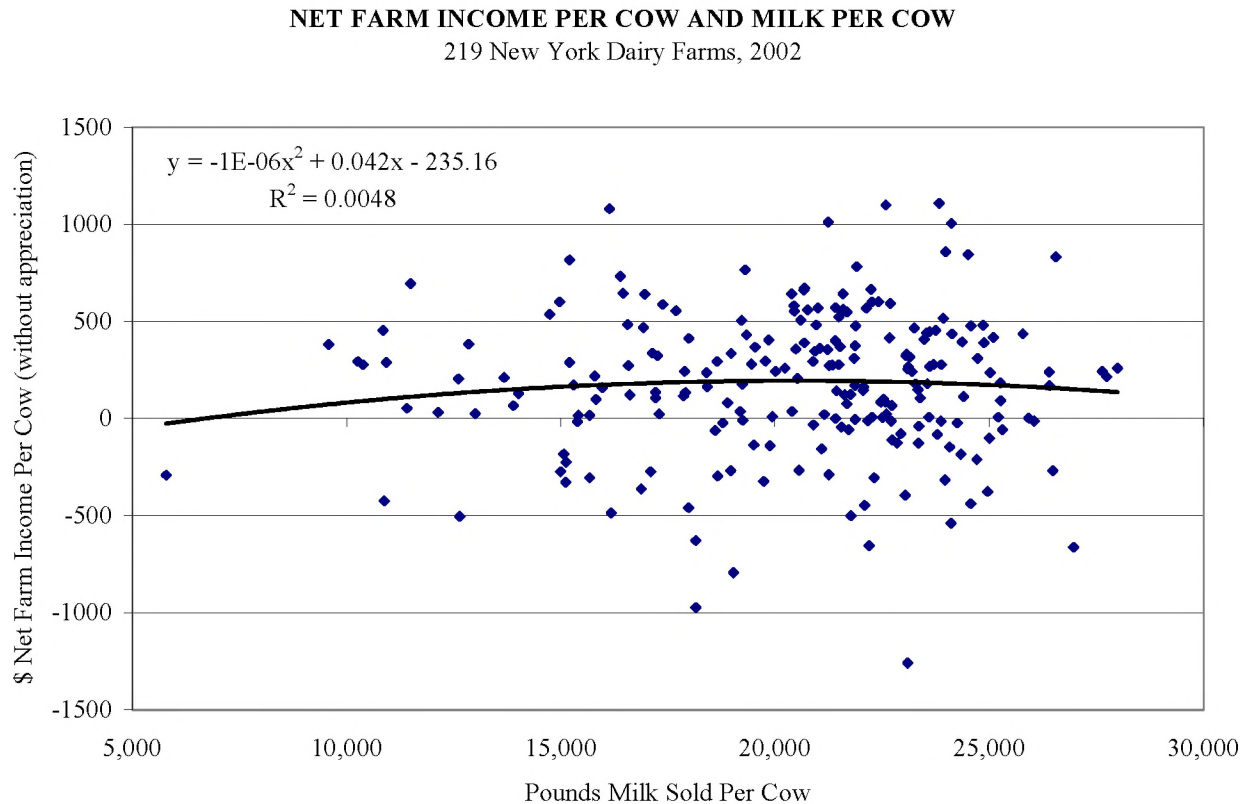


Chart 7.



Charts 8 and 9 look at relationships between cull rates and milk production and net farm income per cow. For the 2002 year, supplementary information concerning dairy replacements was collected from 51 participating farms. The culling chart (Table 30) reports the decile range of reported factors for the different information that was collected. The average culling rate was 31.8 percent, sell rate was 26.7 percent, and death rate was 5.1 percent. The average number of cows sold for beef equaled 79, 2 cows were sold for dairy, and 15 cows died. Please refer to the glossary for definitions of the different terms and how the measures were calculated.

Chart 8.

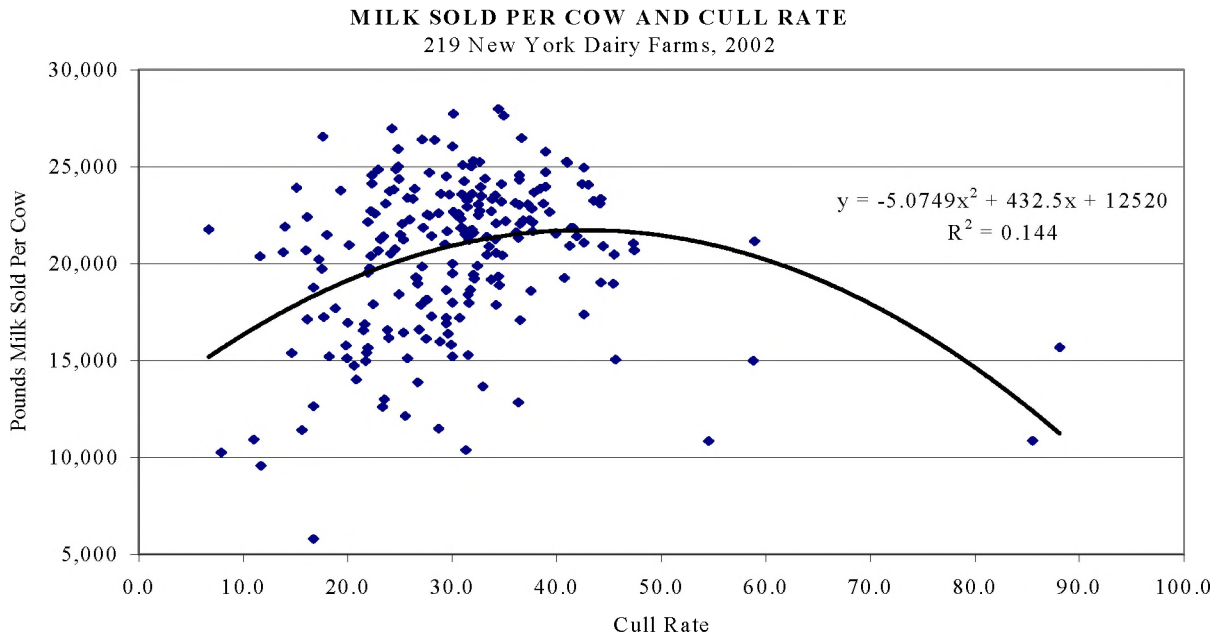


Chart 9.

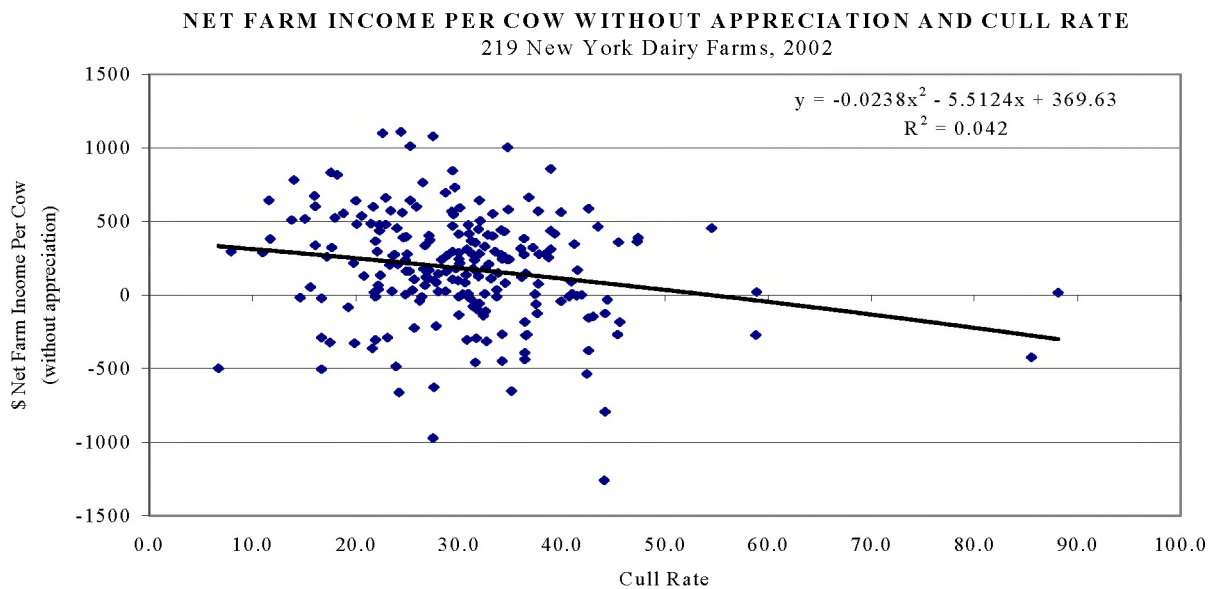


Table 30.

**CULLING RATE AND DAIRY REPLACEMENT INFORMATION**  
**New York Dairy Farms, 2002**

Decile	Sell Rate	Death Rate	Cull Rate	Value of Cows Sold	Value of Animals Purchased	Percent of Replacements Purchased	Percent of Heifers Being Custom Raised
	-----219 Farms <sup>32</sup> -----				\$/head (68 Farms)	-----51 Farms <sup>32</sup> -----	
1	10%	0%	15%	\$200	\$801	0%	0%
2	17	1	21	309	1,026	0	0
3	20	2	24	353	1,239	0	0
4	22	3	27	386	1,398	0	0
5	24	4	29	416	1,487	1	0
6	26	5	31	450	1,605	6	0
7	28	5	33	474	1,758	11	12
8	31	6	35	507	1,907	19	39
9	34	8	39	576	2,332	24	57
10	43	14	50	1,192	5,071	67	93

<sup>32</sup>All 219 participating farms provided culling information. Fifty-one farms provided supplemental information on heifer acquisitions.

### Cost of Producing Milk

The cost of producing milk has been compiled below using the whole farm method. The following steps are used in the calculations.

1. The cost of expansion livestock is added to total accrual operating expenses to offset any related inventory increase included in accrual receipts.
2. Accrual milk sales are deducted from total accrual receipts to get total accrual nonmilk receipts, which are used to represent total nonmilk operating costs. This assumes that costs equal revenues for nonmilk costs.
3. Total accrual nonmilk receipts are subtracted from total accrual operating expenses including expansion livestock to calculate the operating cost of producing milk.
4. Machinery depreciation and building depreciation are added to operating costs to determine the purchased inputs cost of producing milk.
5. The opportunity cost of equity capital, operator's labor and operator's management and the value of unpaid family labor are added to all other costs to obtain the total cost of producing milk. This cost includes all the operating, depreciation, and imputed costs of producing milk.

**Table 31.**

#### **COST OF PRODUCING MILK, WHOLE FARM METHOD 219 New York Dairy Farms, 2002**

Item	Average 219 Farms	Average Top 10% Farms <sup>33</sup>
Total Accrual Operating Expenses	\$878,286	\$949,136
Expansion Livestock, Accrual	+ 14,051	+ 23,577
1. Total Accrual Operating Expenses, Including Expansion Livestock	\$892,337	\$972,713
Total Accrual Receipts	\$1,022,454	\$1,278,955
Milk Sales, Accrual	- 858,783	- 1,038,913
2. Total Accrual Nonmilk Receipts	- \$163,671	-\$240,042
3. Operating Cost of Producing Milk	\$728,666	\$732,671
Machinery Depreciation	+ 50,250	+ 45,446
Building Depreciation	+ 41,682	+ 39,517
4. Purchased Inputs Cost of Producing Milk	\$820,598	\$817,634
Family Labor Unpaid (\$2,100/month)	+ 5,460	+ 2,520
Real Interest on Equity Capital	+ 58,648	+ 74,181
Value of Operator's Labor & Management	+ 58,394	+ 56,952
5. Total Costs of Producing Milk	\$943,100	\$951,287
6. Costs Per Cwt.:		
Cwt. Milk Sold	66,177	78,852
Operating Cost Per Cwt.	\$11.01	\$9.29
Purchased Inputs Cost Per Cwt.	\$12.40	\$10.37
Total Cost Per Cwt.	\$14.25	\$12.06

<sup>33</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

Costs of producing milk per hundredweight are presented for eight expenditure categories in Table 32. The whole farm method assumption that accrual nonmilk receipts represent nonmilk operating costs is used in computing net costs. A \$7,982 average increase in crop inventories per farm, (\$.12 per hundredweight of milk), is included in crop sales on the 219 farms. The top 10 percent farms had a \$24,300 average increase in crop inventories per farm (\$.31 per hundredweight of milk).

**Table 32.**

**ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT  
BASED ON WHOLE FARM DATA  
219 New York Dairy Farms, 2002**

Item	Average 219 Farms		Average Top 10% Farms <sup>35</sup>	
Dairy grain and concentrate	\$3.84		\$3.57	
Dairy roughage	0.26		0.29	
Nondairy feed	<u>0.00</u>		<u>0.00</u>	
Total feed expense		\$4.10		\$3.86
Crop expense	0.69		0.51	
- Crop sales and government receipts <sup>34</sup>	<u>0.96</u>		<u>1.09</u>	
Net Feed and Crop Expense		\$3.83		\$3.28
Hired labor	2.44		2.44	
Operator's and family labor	<u>0.96</u>		<u>0.75</u>	
Total Labor Expense		\$3.40		\$3.19
Machine repairs, fuel and hire	1.29		1.13	
Machinery depreciation	0.76		0.58	
- Gas tax refunds and custom work	<u>0.06</u>		<u>0.09</u>	
Net Machinery Expense		\$1.99		\$1.62
Replacement and expansion cattle purchases	0.37		0.60	
- Sales and inventory growth	<u>1.21</u>		<u>1.56</u>	
Net Cattle Purchases		\$-0.83		\$-0.96
Milk marketing costs	0.65		0.59	
All other livestock expense excluding purchases	<u>2.01</u>		<u>1.63</u>	
Net Livestock Expense		\$2.66		\$2.22
Real estate repairs, rent and taxes	0.66		0.63	
Building depreciation	<u>0.63</u>		<u>0.50</u>	
Total Real Estate Expense		\$1.29		\$1.13
Interest paid	0.61		0.45	
Interest on equity	<u>0.89</u>		<u>0.94</u>	
Total Interest Expense		\$1.50		\$1.39
Other operating and miscellaneous expenses	0.67		0.50	
- Miscellaneous income	<u>0.25</u>		<u>0.30</u>	
Net Miscellaneous Expenses		\$ 0.42		\$0.20
Total Cost of Producing Milk		\$14.25		\$12.06
Purchased Inputs Cost		\$12.40		\$10.37
Total Operating Cost		\$11.01		\$9.29

<sup>34</sup>Non-crop related government payments may bias the results.

<sup>35</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

Costs of producing milk per hundredweight are presented in the table below for 180 farms that participated both in 2001 and 2002. Costs of production decreased in all categories except net cattle purchases and net livestock expense when 2002 data are compared to 2001.

**Table 33.**

**ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT  
BASED ON WHOLE FARM DATA  
Same 180 New York Dairy Farms, 2001-2002**

Item	2001	2002	Percent Change
Dairy grain and concentrate	\$3.98	\$3.84	-3.5%
Dairy roughage	0.24	0.27	12.5
Nondairy feed	<u>0.00</u>	<u>0.00</u>	
Total feed expense	\$4.22	\$4.11	-2.6
Crop expense	0.78	0.69	
- Crop sales and government receipts <sup>36</sup>	<u>0.50</u>	<u>0.95</u>	
Net Feed and Crop Expense	\$4.50	\$3.85	-14.4%
Hired labor	2.40	2.45	
Operator's and family labor	<u>1.01</u>	<u>0.93</u>	
Total Labor Expense	\$3.41	\$3.38	-0.9%
Machine repairs, fuel and hire	1.49	1.26	
Machinery depreciation	0.75	0.76	
- Gas tax refunds and custom work	<u>0.06</u>	<u>0.06</u>	
Net Machinery Expense	\$2.18	\$1.96	-10.1%
Replacement and expansion cattle purchases	0.51	0.40	
- Sales and inventory growth	<u>1.38</u>	<u>1.22</u>	
Net Cattle Purchases	\$-0.87	\$-0.82	5.7%
Milk marketing costs	0.63	0.64	
All other livestock expense excluding purchases	<u>2.00</u>	<u>2.05</u>	
Net Livestock Expense	\$2.63	\$2.69	2.3%
Real estate repairs, rent and taxes	0.73	0.66	
Building depreciation	<u>0.59</u>	<u>0.65</u>	
Total Real Estate Expense	\$1.32	\$1.31	-0.8%
Interest paid	0.83	0.61	
Interest on equity	<u>0.89</u>	<u>0.88</u>	
Total Interest Expense	\$1.72	\$1.49	-13.4%
Other operating and miscellaneous expenses	0.62	0.63	
- Miscellaneous income	<u>0.23</u>	<u>0.26</u>	
Net Miscellaneous Expenses	\$0.39	\$0.37	-5.1%
Total Cost of Producing Milk	\$15.29	\$14.25	-6.8%
Purchased Inputs Cost	\$13.39	\$12.44	-7.1%
Total Operating Cost	\$12.05	\$11.02	-8.5%
Average Price Received for Milk	\$15.99	\$12.98	-18.8%

<sup>36</sup>Non-crop related government payments may bias the results.



The three measures of the accrual cost of producing milk calculated on a per cow and per hundredweight basis are compared with accrual receipts from milk sales in Table 34.

**Table 34.**

**COST OF PRODUCING MILK, ACCRUAL RECEIPTS FROM DAIRY, AND PROFITABILITY  
219 New York Dairy Farms, 2002**

Item	Average 219 Farms			Average Top 10% Farms <sup>37</sup>		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
<u>Accrual Cost of Producing Milk</u>						
Operating Cost	\$728,666	\$2,453	\$11.01	\$732,671	\$2,105	\$9.29
Purchased Inputs Cost	820,598	2,763	12.40	817,634	2,350	10.37
Total Cost	943,100	3,175	14.25	951,287	2,734	12.06
<u>Accrual Receipts from Milk</u>						
Net Milk Receipts	\$858,783	\$2,892	\$12.98	\$1,038,913	\$2,985	\$13.18
	815,585	2,746	12.32	992,071	2,851	12.58
<u>Profitability</u>						
Net Farm Income without Appreciation	\$38,185	\$129	\$0.58	\$221,279	\$636	\$2.81
Net Farm Income with Appreciation	\$82,482	\$278	\$1.25	\$302,897	\$870	\$3.84

<sup>37</sup> Average of 21 farms with highest rates of return to all capital (without appreciation).

The operating cost of producing milk on all 219 dairy farms averaged \$11.01 per hundredweight, leaving \$1.31 to cover depreciation, unpaid labor and operator resources.

The total cost of producing milk on all 219 dairy farms averaged \$14.25 per hundredweight, \$1.27 more than the average price received for milk sold from these farms during 2002. The imputed costs or charge for the operator's labor, management and equity capital average \$1.77 per hundredweight in 2002. But the farmer received \$0.49 per hundredweight for these inputs. The 21 most profitable farms held their operating costs to \$9.29 per hundredweight and their total cost of producing milk averaged \$12.06 per hundredweight. This left a profit of \$1.12 per hundredweight of milk sold.

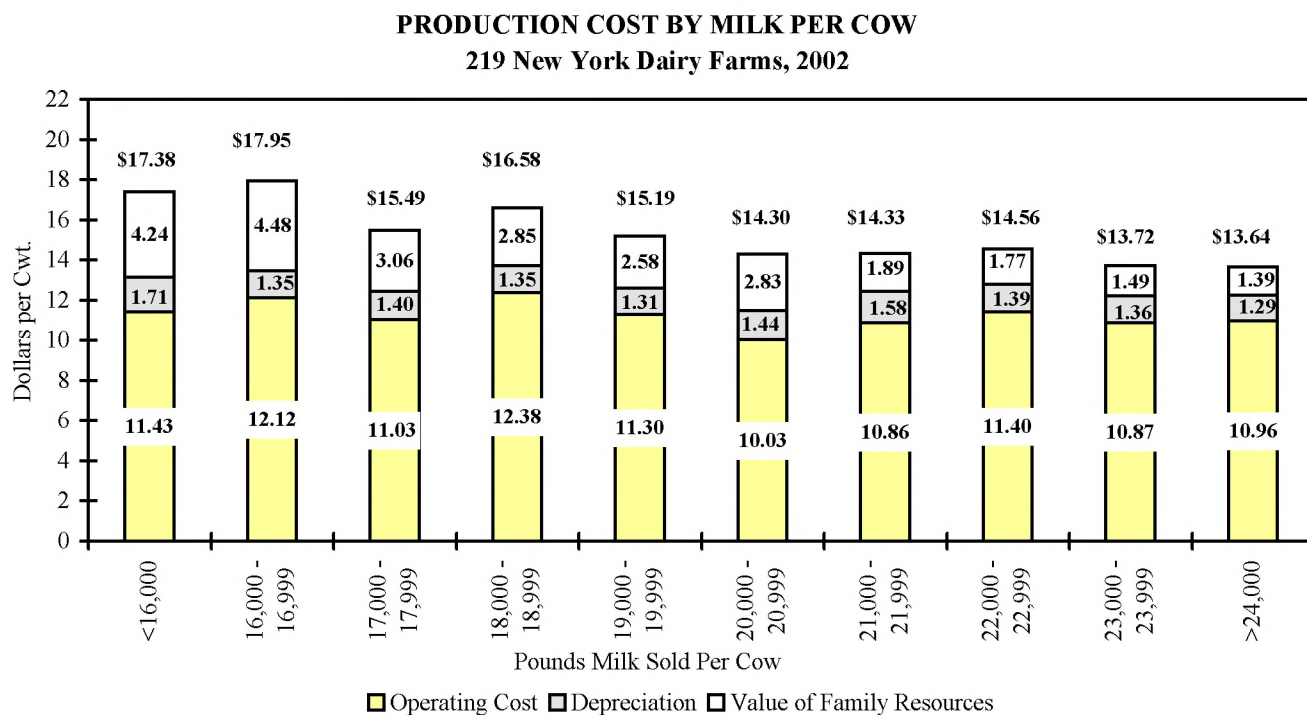
The strong relationship between milk output per cow and the total cost of producing milk are shown in Table 35 and Chart 10 on page 34. Farms selling less than 19,000 pounds of milk per cow had average total costs of production of \$16.85 per hundredweight while those selling 19,000 pounds and over averaged \$14.41 for a difference of \$2.44 per hundredweight.

**Table 35.**

**FARM COST OF PRODUCING MILK BY MILK SOLD PER COW  
219 New York Dairy Farms, 2002**

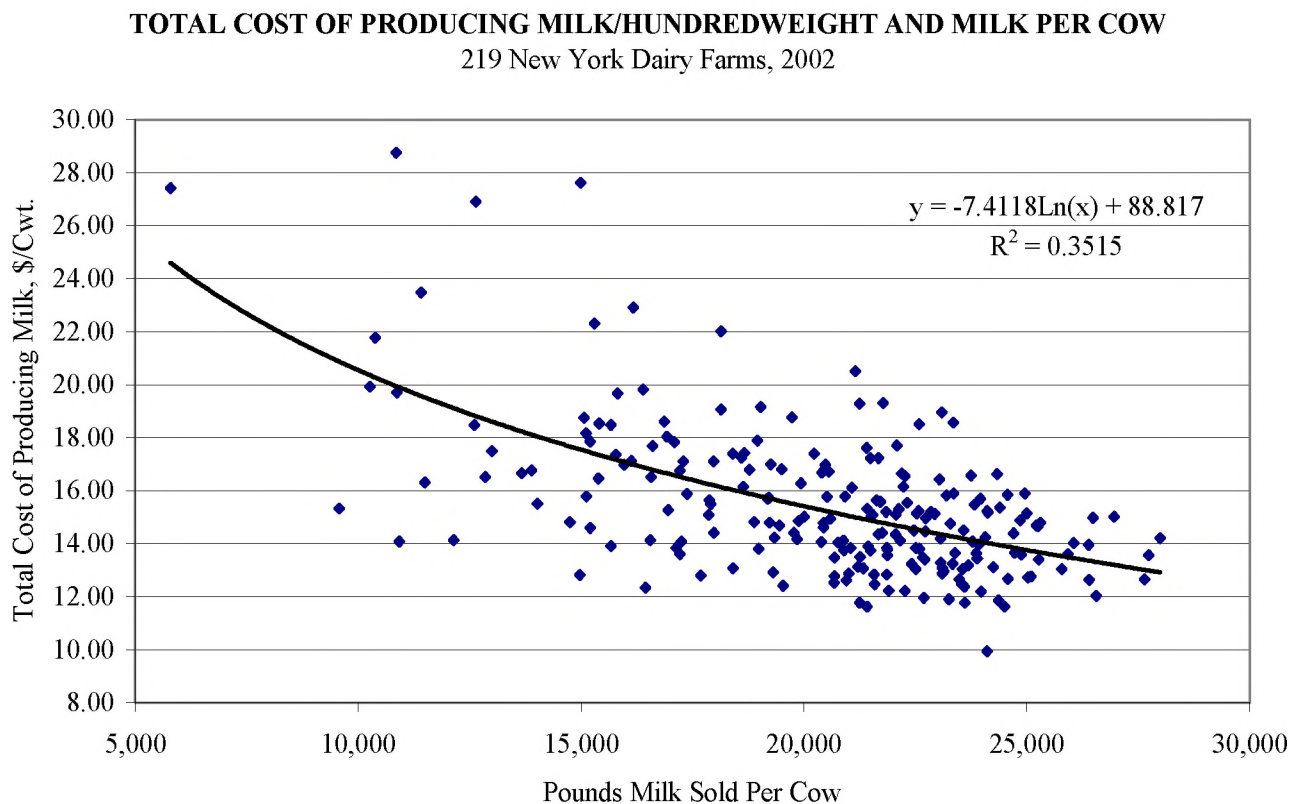
Pounds Milk Sold Per Cow	Cost per Hundredweight					Accrual Receipts From Milk Per Cwt.	Return Per Cwt. To Operator's Labor, Mgmt. & Capital
	Operating Costs			Purchased Inputs	Total		
	Hired Labor	Dairy Grain & Conc.	Total Operating				
Under 16,000	\$1.90	\$4.45	\$11.43	\$13.14	\$17.38	\$13.87	\$0.21
16,000-16,999	2.34	4.35	12.12	13.47	17.95	15.97	1.84
17,000-17,999	1.61	4.04	11.03	12.43	15.49	12.85	0.26
18,000-18,999	1.95	4.22	12.38	13.73	16.58	13.09	-0.74
19,000-19,999	2.06	4.09	11.30	12.61	15.19	13.11	0.39
20,000-20,999	1.74	3.84	10.03	11.47	14.30	12.95	1.20
21,000-21,999	2.40	3.76	10.86	12.44	14.33	13.18	0.69
22,000-22,999	2.38	3.92	11.40	12.79	14.56	12.88	0.01
23,000-23,999	2.45	3.80	10.87	12.23	13.72	12.92	0.66
24,000 & over	2.76	3.73	10.96	12.25	13.64	12.72	0.44

Chart 10.



The relationship between total cost of producing milk and milk sold per cow is diagrammed in Chart 11. It shows that as milk sold per cow increases, on the average, total cost of production generally decreases.

Chart 11.



Data in Table 36 and Chart 12 show that the average total cost of production generally declines as herd size increases. This is attributable to spreading fixed costs over more units of output.

Total operating costs are lowest at the smallest herd size and increase for each of the next four herd size categories. Beyond 200 cows, the operating costs do not exhibit a trend. However, hired labor cost increases with herd size, while purchased dairy grain and concentrate are not related to herd size.

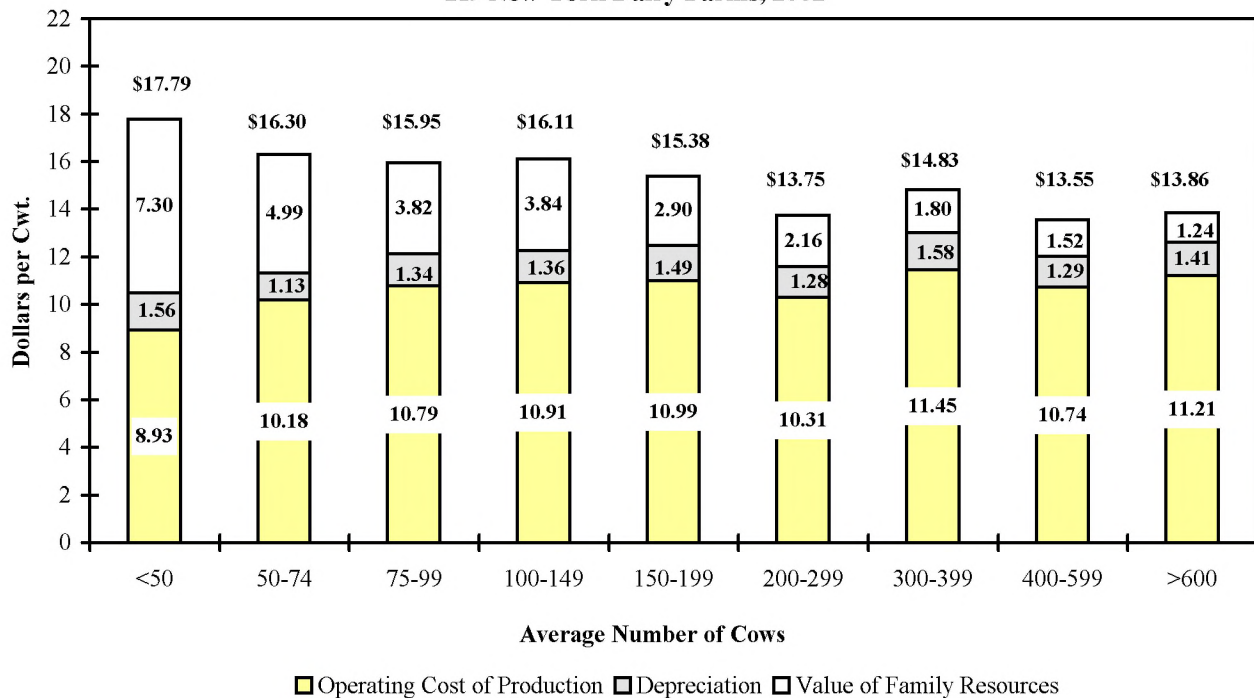
**Table 36.**

**FARM COST OF PRODUCING MILK BY HERD SIZE**  
219 New York Dairy Farms, 2002

Number of Cows	Cost per Hundredweight					Accrual Receipts From Milk	Return Per Cwt. To Operator's Labor, Mgmt. & Capital
	Operating Costs			Purchased Inputs	Total		
	Hired Labor	Dairy Grain & Conc.	Total Operating				
Under 50	\$0.45	\$3.53	\$8.93	\$10.49	\$17.79	\$12.74	\$0.77
50 to 74	0.91	3.96	10.18	11.31	16.30	12.85	0.67
75 to 99	1.41	4.12	10.79	12.13	15.95	12.97	0.48
100 to 149	1.83	4.14	10.91	12.27	16.11	13.22	0.65
150 to 199	2.18	3.65	10.99	12.48	15.38	12.75	0.12
200 to 299	1.99	3.90	10.31	11.59	13.75	12.99	1.36
300 to 399	2.51	3.98	11.45	13.03	14.83	13.05	-0.02
400 to 599	2.41	3.58	10.74	12.03	13.55	12.84	0.78
600 and over	2.73	3.87	11.21	12.62	13.86	13.02	0.39

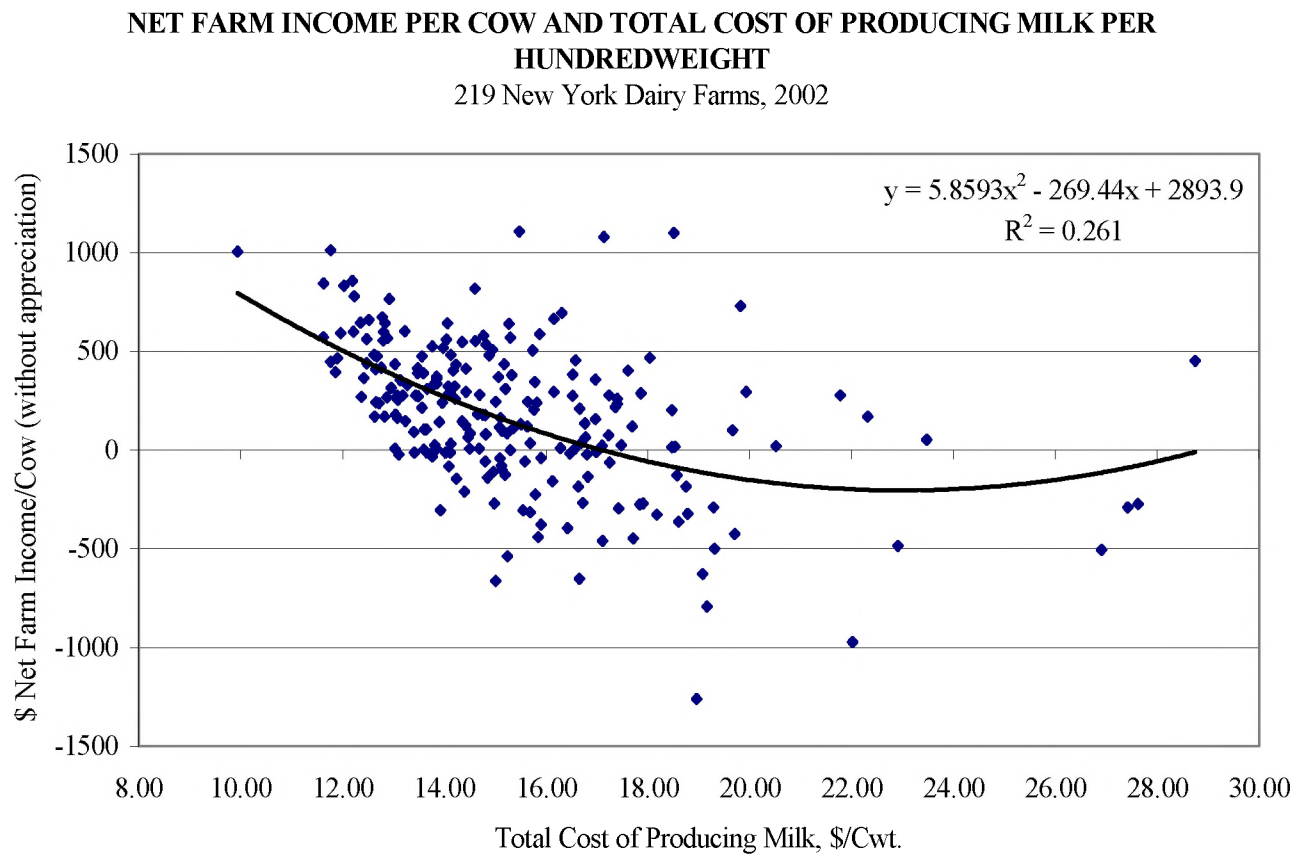
**Chart 12.**

**PRODUCTION COST BY HERD SIZE**  
219 New York Dairy Farms, 2002



The importance of cost control and its impact on farm profitability are illustrated in Chart 13. As the total cost of producing milk per hundredweight increased, net farm income per cow fell. All farms had a positive net farm income per cow until the total cost of producing milk exceeded \$13.00 per hundredweight. The majority of the farms with costs greater than \$18 per hundredweight experienced negative net farm incomes per cow.

**Chart 13.**



### **Cost of Producing Milk (continued)**

A 10-year comparison of the average costs and returns of producing milk per hundredweight are presented in Table 37 on page 38. Average individual operating and overhead expenses per hundredweight of milk sold are reported on all specialized dairy farms included in the New York State Summary from 1993 through 2002. In 2002 the average operating cost of producing milk decreased 7 percent after increasing 5 percent from 2000 to 2001. The average return per hundredweight to operator labor, management, and capital was \$2.21 lower in 2002, 82 percent below 2001. In only two years during the last ten years has milk price exceeded the total cost of producing milk. The years were 1998 and 2001.

Hired labor expense per hundredweight has increased consistently from 1993 to 2002. Hired labor expense was \$1.86 in 1993 and has risen to \$2.44 in 2002. Thus, even as pounds of milk sold per worker have increased from 664,868 in 1993 to 917,854 in 2002; labor expense per worker has increased even more rapidly. Some of this effect is due to increasing farm size where a larger portion of the labor force is comprised of hired workers. Purchased feed expense per hundredweight of milk has been remarkably stable. At \$3.85 in 1993, it decreased to a low of \$3.71 in 1995, before reaching its high a year later at \$4.73. In 2002, purchased feed expense was \$0.25 higher than in 1993.

Interest paid on debt per hundredweight of milk sold has fluctuated over this period. In 1993, interest expense was \$0.80 per hundredweight. In 2002, interest expense was at a ten-year low of \$0.62 per hundredweight. Property taxes per hundredweight of milk have decreased by 41 percent during this ten-year period. Property taxes were \$0.34 per hundredweight in 1993, but were only \$0.20 in 2002. This is due to productivity increases and more of the land resources being rented, rather than owned, and fewer acres per cow.

A ten-year comparison of selected average business factors for all specialized DFBS farms is presented in Table 38 on page 39. Average cow numbers are up 128 percent, tillable acres have increased 88 percent, and milk sold per farm has jumped 171 percent since 1993. Capital investment per cow has increased 5.5 percent, far less than inflation, over the last ten years. Labor and management income per operator decreased 131 percent in 2002 compared to 2001, farm net worth decreased 0.6 percent, and percent equity decreased slightly in 2002 compared to 2001.

Hay crop yields were 2.7 tons dry matter per acre in 1993 and 3.1 tons dry matter per acre in 2002. Corn silage yields, as fed, have varied more widely and were 15.4 tons per acre in 2002. As yields increased, fertilizer and lime expense increased \$2.00 per tillable acre, from \$25 to \$27 per acre. Pounds of milk sold per cow increased by 19 percent, from 18,858 pounds in 1993 to 22,312 pounds in 2002.

Average number of workers per farm increased by 3.53 and operators/managers per farm increased by 0.37. Cows per worker equivalent increased from 35 in 1993 to 41 in 2002, but labor cost per cow increased from \$568 to \$725 over the same time period.

The asset turnover ratio has improved in recent years. Total accrual receipts as a proportion of total farm assets (asset turnover ratio) has increased from 0.46 in 1993 to 0.53 in 2002. Percent equity has deteriorated. It was 65 percent in 1993, but was down to 57 percent in 2002 because there are more large (higher leveraged) farms in the sample.

Table 37.

**TEN YEAR COMPARISON: AVERAGE COST OF PRODUCING MILK PER HUNDREDWEIGHT**  
**New York Dairy Farms, 1993 to 2002**

Item	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<u>Operating Expenses</u>										
Hired labor	\$1.86	\$1.80	\$1.78	\$1.89	\$1.97	\$2.06	\$2.14	\$2.25	\$2.41	\$2.44
Purchased feed	3.85	3.89	3.71	4.73	4.63	4.18	3.96	3.91	4.25	4.10
Machinery repair, vehicle expense & rent	.93	.92	.85	1.02	.94	1.12	1.18	1.06	1.21	1.01
Fuel, oil & grease	.34	.31	.27	.31	.28	.25	.24	.34	.32	.28
Replacement livestock	.17	.21	.15	.19	.18	.24	.24	.23	.20	.16
Breeding fees	.19	.17	.15	.15	.15	.16	.17	.17	.19	.21
Veterinary & medicine	.37	.40	.39	.42	.41	.45	.47	.51	.54	.56
Milk marketing	.64	.67	.70	.59	.52	.53	.49	.69	.63	.65
Other dairy expenses	.72	.88	.92	.99	1.05	1.09	1.13	1.16	1.26	1.25
Lime & fertilizer	.36	.33	.31	.32	.33	.35	.35	.29	.33	.27
Seeds & plants	.20	.19	.19	.20	.21	.22	.20	.19	.20	.20
Spray & other crop expense	.20	.20	.20	.21	.23	.24	.24	.22	.25	.22
Land, building & fence repair	.21	.21	.16	.23	.19	.27	.27	.21	.26	.19
Taxes	.34	.29	.27	.26	.23	.21	.21	.20	.21	.20
Insurance	.20	.18	.17	.18	.16	.17	.16	.16	.14	.16
Utilities (farm share)	.39	.38	.38	.39	.35	.32	.31	.32	.33	.34
Interest paid	.80	.81	.94	.91	.90	.89	.83	.95	.82	.61
Misc. (including rent)	.41	.40	.40	.41	.38	.41	.44	.45	.42	.44
Total Operating Expenses	\$12.18	\$12.24	\$11.94	\$13.40	\$13.12	\$13.15	\$13.02	\$13.31	\$13.98	\$13.27
Less: Nonmilk cash receipts	1.65	1.30	1.15	1.07	1.14	1.18	1.44	1.83	1.49	1.91
Increase in grown feed & supplies	.13	.25	.14	.15	.07	.25	.25	0.11	0.10	0.12
Increase in livestock	.22	.21	.25	.18	.15	.22	.11	0.06	0.52	0.23
OPERATING COST OF MILK PRODUCTION	\$10.18	\$10.47	\$10.40	\$12.00	\$11.76	\$11.50	\$11.22	\$11.31	\$11.87	\$11.01
<u>Overhead Expenses</u>										
Depreciation: machinery & buildings	\$1.17	\$1.13	\$1.07	\$1.04	\$0.95	\$1.08	\$1.14	\$1.20	\$1.30	\$1.39
Unpaid labor	.15	.12	.12	.13	.13	.11	.11	.10	.10	.08
Operator(s) labor <sup>38</sup>	1.00	.86	.92	.88	.79	.74	.80	.79	.74	.74
Operator(s) management (5% of cash receipts)	.74	.73	.70	.80	.73	.82	.83	.76	.87	.75
Interest on farm equity capital (5%)	1.11	1.00	.94	.94	.87	.85	.86	.88	.91	.89
Total Overhead Expenses	\$4.17	\$3.84	\$3.75	\$3.79	\$3.47	\$3.60	\$3.74	\$3.73	\$3.92	\$3.85
TOTAL COST OF MILK PRODUCTION	\$14.35	\$14.31	\$14.15	\$15.79	\$15.23	\$15.10	\$14.96	\$15.04	\$15.79	\$14.86
AVERAGE FARM PRICE OF MILK	\$13.14	\$13.44	\$13.03	\$14.98	\$13.65	\$15.60	\$14.91	\$13.38	\$15.98	\$12.98
Return per cwt. to operator labor, capital & mgmt.	\$1.64	\$1.72	\$1.44	\$1.81	\$0.81	\$2.91	\$2.44	\$0.77	\$2.71	\$0.50
Rate of return on farm equity capital	-0.4%	0.6%	-1.0%	0.7%	-4.1%	8.0%	4.7%	-4.4%	6.0%	-5.6%

<sup>38</sup>1993 = \$1,400/month, 1994 and 1995 = \$1,450/month, 1996 = \$1,500/month, 1997 = \$1,550/month, 1998 = \$1,600/month, 1999 = \$1,800/month, 2000 = \$1,900/month, 2001 = \$2,000/month, and 2002 = \$2,100/month of operator labor.

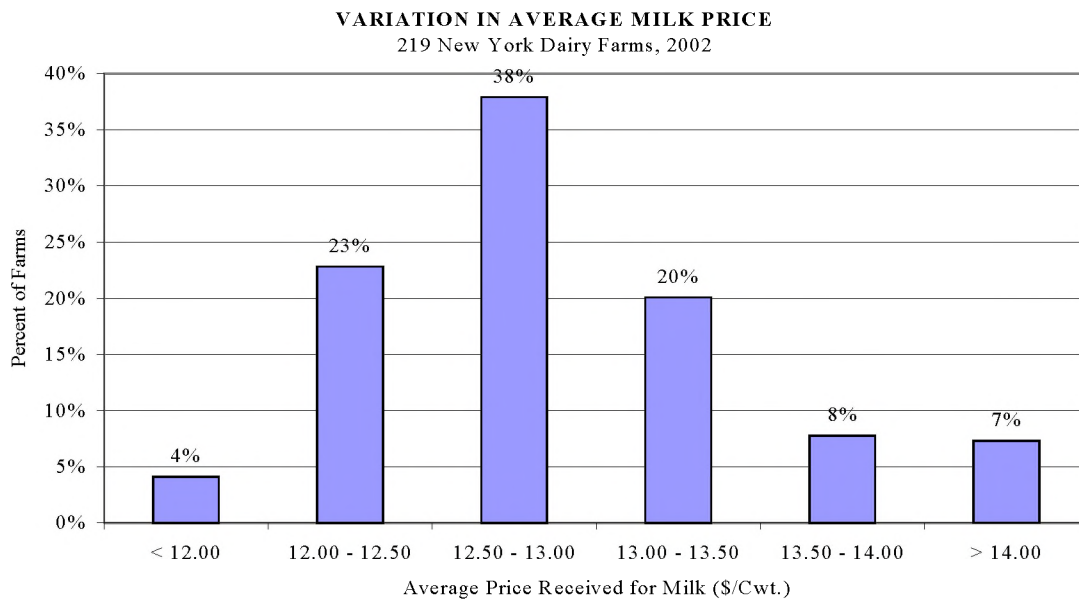
**Table 38.**

**TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS**  
**New York Dairy Farms, 1993 to 2002**

Item	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Number of farms	343	321	321	300	253	305	314	294	228	219
<u>Cropping Program</u>										
Total tillable acres	351	392	399	415	462	497	516	566	618	660
Tillable acres rented	135	159	166	183	207	232	234	262	290	337
Hay crop acres	182	195	197	198	219	239	248	274	302	323
Corn silage acres	96	110	117	120	156	175	186	192	210	232
Hay crop, tons DM/acre	2.7	3.0	2.8	2.8	2.5	3.1	2.9	3.3	2.8	3.1
Corn silage, tons/acre	14.9	16.4	15.6	15.9	16.1	18.0	16.3	15.1	16.5	15.4
Fert. & lime exp./tillable acre	\$25	\$25	\$25	\$26	\$28	\$31	\$32	\$27	\$32	\$27
Machinery cost/cow	\$430	\$438	\$402	\$450	\$429	\$471	\$502	\$513	\$554	\$520
<u>Dairy Analysis</u>										
Number of cows	130	151	160	167	190	210	224	246	277	297
Number of heifers	100	116	121	124	139	155	164	186	207	226
Milk sold, cwt.	24,448	30,335	32,362	33,504	39,309	43,954	47,932	52,871	60,290	66,177
Milk sold/cow, lbs.	18,858	20,091	20,269	20,113	20,651	20,900	21,439	21,516	21,762	22,312
Purchased dairy feed/cwt. milk	\$3.85	\$3.89	\$3.70	\$4.73	\$4.63	\$4.18	\$3.96	\$3.91	\$4.25	\$4.10
Purchased grain & concentrate as % of milk receipts	29%	28%	27%	30%	33%	26%	25%	27%	25%	30%
Purchased feed & crop exp/cwt.milk	\$4.61	\$4.61	\$4.39	\$5.46	\$5.39	\$5.00	\$4.75	\$4.61	\$5.03	\$4.79
<u>Capital Efficiency</u>										
Farm capital/cow	\$6,462	\$6,398	\$6,264	\$6,218	\$6,196	\$6,161	\$6,368	\$6,535	\$6,755	\$6,794
Real estate/cow	\$2,932	\$2,859	\$2,763	\$2,701	\$2,650	\$2,537	\$2,562	\$2,615	\$2,713	\$2,612
Mach. invest./cow	\$1,165	\$1,150	\$1,098	\$1,107	\$1,108	\$1,118	\$1,163	\$1,225	\$1,222	\$1,261
Asset turnover ratio	.46	.50	.49	.55	.52	0.61	0.59	0.54	0.63	0.53
<u>Labor Efficiency</u>										
Worker equivalent	3.68	4.02	4.40	4.48	5.01	5.35	5.71	6.11	6.72	7.21
Operator/manager equivalent	1.45	1.49	1.56	1.56	1.60	1.62	1.76	1.83	1.94	1.82
Milk sold/worker, lbs.	664,868	755,178	736,269	747,861	784,604	821,565	839,432	865,325	897,167	917,854
Cows/worker	35	38	36	37	38	39	39	40	41	41
Labor cost/cow	\$568	\$558	\$570	\$582	\$598	\$609	\$653	\$674	\$706	\$725
<u>Profitability &amp; Financial Analysis</u>										
Labor & mgmt. income/operator	\$9,000	\$14,789	\$10,346	\$18,651	\$-1,424	\$55,917	\$42,942	\$-2,908	\$45,479	\$-14,243
Farm net worth, end year	\$542,126	\$608,749	\$624,261	\$648,186	\$685,665	\$798,297	\$865,626	\$942,881	\$1,181,055	\$1,173,836
Percent equity	65%	63%	61%	61%	57%	59%	58%	57%	60%	57%

The average or mean price per hundredweight of milk sold is calculated by dividing gross milk receipts by total pounds of milk sold. The average price for the 219 farms was \$12.98 but there was considerable variation among the individual farms. The variation in average price received and the distribution of farms around the mean is shown below.

**Chart 14.**



Sixty-one percent of the farms received from \$12.00 to \$13.00 per hundredweight of milk sold. Thirty-five percent of the farms received \$13.00 or more and 4 percent received less than \$12.00 per hundredweight. Location and organization of markets are factors contributing to the difference in average milk prices on these dairy farms. Management practices on farms as well as in milk companies also affect farm milk prices. Seasonality of production and butterfat content are two variables that affect milk price. Butterfat content, which varied from an average 3.6 percent to 4.1 percent as the milk price increased from less than \$12.00 per cwt. to more than \$14.00, explains a small portion of the difference in milk price on these farms. Three certified organic dairy farms are included in the 219 farms. More milk price analysis by component can be found on pages 8 and 9.

The accrual operating expenses most commonly associated with the dairy enterprise are listed in the table below. Evaluating these costs per unit of production enables the comparison of different size dairy farms for strengths and areas for improvement.

**Table 39.**

**DAIRY RELATED ACCRUAL EXPENSES**  
219 New York Dairy Farms, 2002

Item	Average 219 Farms		Average Top 10% Farms <sup>39</sup>	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$856	\$3.84	\$808	\$3.57
Purchased dairy roughage	57	.26	66	.29
Total Purchased Dairy Feed	\$913	\$4.10	\$874	\$3.86
Purchased grain & concentrate as % of milk receipts		30%		27%
Purchased feed & crop expense	\$1,068	\$4.79	\$991	\$4.37
Purchased feed & crop expense as % of milk receipts		37%		33%
Breeding	\$46	\$.21	\$56	\$.25
Veterinary & medicine	125	.56	113	.50
Milk marketing	145	.65	135	.59
Bedding	49	.22	34	.15
Milking Supplies	70	.32	65	.29
Cattle lease	6	.03	3	.01
Custom boarding	61	.27	30	.13
bST expense	55	.25	44	.19
Other livestock expense	35	.16	25	.11

<sup>39</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).



Feed costs per cow and per hundredweight of milk sold are influenced by a number of factors. These cost measures are affected by the amount of homegrown grains fed, quality and quantity of the roughage harvested, and the number of youngstock. Feed costs are also influenced by the farmer's ability to purchase grains and concentrates at reasonable prices and to balance nutrients fed with energy and protein requirements.

Purchased dairy grain and concentrates per cow is calculated by dividing the total accrual expenses for dairy grains and concentrates purchased by the average number of cows. Because this also included the amount spent for calf and heifer feed, it actually represents the feed cost for one cow and 0.74 replacement being raised.

Purchased feed and crop expense per hundredweight of milk is one of the most useful feed cost measures because it accounts for some of the variations in feeding and cropping programs, and milk production between herds. It includes all purchased feeds used on the farm, and it includes crop expenses that are associated with feed production. It does not represent total feed costs because machinery, labor and other costs are excluded.

Purchased grain and concentrates as percent of milk sales is calculated by dividing feed purchased by milk receipts. This is another useful measure of feed efficiency although variations in homegrown grains fed, heifers fed, and milk prices can have an impact. Purchased feed and crop expense as percent of milk sales removes much of the variation caused by the feeding of home grown grains.

Cost control has an important affect on farm profitability. The relationship between purchased feed and crop expense per hundredweight of milk and farm profitability is shown in the following table.

**Table 40.**

**PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT  
OF MILK AND FARM INCOME MEASURES  
219 New York Dairy Farms, 2002**

Feed & Crop Exp. Per Cwt. of Milk	Number of Farms	Number of Cows	Forage Dry Matter Harvested Per Cow	Pounds Milk Per Cow	Net Farm Income Without Apprec.	Labor & Management Income Per Operator	Labor & Management Per Operator Per Cow
\$6.00 or more	24	140	4.9	17,679	\$-17,429	\$-29,251	\$-209
5.50 to 5.99	25	178	6.0	18,911	34,078	-7,199	-40
5.00 to 5.49	50	355	7.3	23,067	9,544	-30,587	-86
4.50 to 4.99	47	424	7.3	23,048	55,427	-14,544	-34
4.00 to 4.49	39	317	8.4	22,756	63,020	-7,532	-24
3.50 to 3.99	21	182	7.0	22,278	36,810	-767	-4
Less than 3.50	13	237	11.8	22,920	124,265	30,983	131

On average, farms with feed and crop expenses exceeding \$6.00 per hundredweight of milk reported well below average profits. This is especially striking when the profit measure of labor and management income per operator is presented on a per cow basis. Farms reporting purchased feed and crop expense less than \$3.50 per hundredweight of milk, reported the highest labor and management income per operator per cow.

### Capital and Labor Efficiency Analysis

Capital efficiency factors show how intensively capital is being used in the farm business. Capital efficiency can be measured as investment per worker and per cow. It can also be measured in terms of the relationship to farm receipts.

**Table 41.**

CAPITAL EFFICIENCY 219 New York Dairy Farms, 2002				
Item (Average for Year)	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
Farm capital	\$279,867	\$6,794	\$3,057	\$6,247
Real estate		\$2,612		\$2,402
Machinery & equipment	\$51,958	\$1,261	\$568	
<u>Ratios</u>				
Asset turnover	Operating Expense	Interest Expense		Depreciation Expense
0.53	0.83	0.04		0.09
<u>Average Top 10% Farms:</u> <sup>40</sup>				
Farm capital	\$297,512	\$6,523	\$2,907	\$7,299
Real estate		\$2,132		\$2,386
Machinery & equipment	\$58,503	\$1,283	\$572	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense		Depreciation Expense
0.60	0.73	0.03		0.07

<sup>40</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

Asset turnover ratio measures the relationship between capital investment and farm receipts. It is computed by dividing the year's total farm accrual receipts including appreciation by the average farm assets. The relationship the asset turnover ratio has to farm profitability and other factors is shown in the following table. As a general rule, dairy farmers should aim for an asset turnover ratio of 0.6 or higher. The operational ratios reflect the relationship of expense categories to total farm receipts. The sum of the operating, interest, and depreciation expense ratios expresses total farm expenses per dollar of total farm receipts.

**Table 42.**

ASSET TURNOVER AND PROFITABILITY 219 New York Dairy Farms, 2002						
Ratio	No. of Farms	No. of Cows	Farm Capital (average for year)		Labor & Mgt. Inc. Per Operator	Net Farm Income (w/o apprec.)
			Per Cow	Per Worker		
≥ .70	14	737	\$4,921	\$233,520	\$16,915	\$123,593
.60 to .69	28	429	5,860	239,210	5,248	85,789
.50 to .59	48	429	6,890	310,157	-26,177	34,697
.40 to .49	58	252	7,727	297,746	-16,129	31,478
.30 to .39	46	116	8,521	276,876	-20,592	9,115
Less than .30	25	73	11,207	306,406	-19,979	12,776

Measures of labor efficiency are key indicators of the work accomplished by an average worker. The 21 farms with the highest rates of return on all capital (without appreciation) were above the average of all 219 farms in all measures of labor efficiency. The top 10 percent averaged 5 more cows per worker and sold 13 percent more milk per worker than the average of all farms.

**Table 43.**

LABOR EFFICIENCY 219 New York Dairy Farms, 2002				
Labor Efficiency	Average		Farms	
	Total		Per Worker <sup>41</sup>	
				Average Top 10% Farms <sup>42</sup>
				Total
Cows, average number	297	41		46
Milk sold, pounds	6,617,727	917,854		1,033,446
Tillable acres	660	92		102

<sup>41</sup>The method used to calculate worker equivalent incorporates the number of hours actually worked by the owner/operators, instead of using a standard 12 months for each full-time owner/operator of the business. A full-time month is specified to be 230 hours of labor per month.

<sup>42</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

The labor force averaged 7.21 full-time worker equivalents per farm (based on 230 hours per month). Twenty-seven percent of the labor was supplied by the farm operator/managers. There were two operators on 114 farms, three on 43 farms, and 12 farms reported four or more operators.

Labor costs, labor efficiency, and farm profitability are closely related. Farms with high rates of return can attribute some of their success to the control of labor and machinery costs. Labor and machinery costs average \$1,128 per cow and \$4.98 per hundredweight on the 21 farms in the top decile.

**Table 44.**

**LABOR FORCE INVENTORY AND COST ANALYSIS**  
**219 New York Dairy Farms, 2002**

Labor Force	Months <sup>43</sup>	Age	Years of Education	Value of Labor & Management	
Operator number 1	13.9	49	13	\$34,115	
Operator number 2	6.5	44	13	16,473	
Operator number 3	2.3	42	13	6,183	
Operator number 4	0.5	46	14	<u>1,532</u>	
Family paid	5.8			Total \$58,303	
Family unpaid	2.6				
Hired	<u>55.1</u>				
Total	86.6	÷ 12 =	7.21 Worker Equivalent 1.82 Operator/Manager Equivalent		
<u>Average Top 10% Farms.</u> <sup>44</sup>					
Total	91.5	÷ 12 =	7.63 Worker Equivalent 1.58 Operator/Manager Equivalent		
Operators'					
	<u>Average 219 Farms</u>			<u>Avg. Top 10% Farms</u> <sup>44</sup>	
Labor Costs	Total	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value operators' labor (\$2,100/mo.)	\$48,720	\$164	\$.74	\$117	\$.52
Family unpaid (\$2,100/mo.)	5,460	18	.08	7	.03
Hired	<u>161,155</u>	<u>543</u>	<u>2.44</u>	<u>552</u>	<u>2.44</u>
Total Labor	\$215,335	\$725	\$3.25	\$676	\$2.99
Machinery Cost	<u>154,317</u>	<u>520</u>	<u>2.33</u>	<u>451</u>	<u>1.99</u>
Total Labor & Machinery	\$369,652	\$1,245	\$5.59	\$1,128	\$4.98
Hired labor exp. per hired worker equiv.	\$31,755			\$32,478	
Hired labor exp. as % of milk sales	18.8%			18.5%	

<sup>43</sup>See footnote for Table 43.

<sup>44</sup>Average of 21 farms with highest rates of return to all capital (without appreciation).

The relationship of labor efficiency to net farm income is positive over the range in efficiency levels. The higher outputs of milk sold per worker are partially attributable to higher producing cows. However, in 2002, increased labor efficiency did not result in larger labor and management incomes per operator.

**Table 45.**

**MILK SOLD PER WORKER AND NET FARM INCOME**  
**219 New York Dairy Farm, 2002**

Pounds of Milk Sold Per Worker	No. of Farms	No. of Cows	Pounds Milk Per Cow	Net Farm Income (without apprec.)	Labor & Mgmt. Income Per Operator
Under 400,000	29	72	16,063	\$13,633	\$-17,514
400,000 to 499,999	20	74	18,757	11,950	-12,362
500,000 to 599,999	26	131	19,400	470	-23,601
600,000 to 699,999	27	140	20,281	21,380	-12,577
700,000 to 799,999	21	221	21,951	39,464	-7,149
800,000 to 899,999	23	261	21,626	56,585	-2,128
900,000 to 999,999	26	393	23,436	46,001	-13,698
1,000,000 to 1,099,999	15	607	23,477	45,080	-28,753
1,100,000 & over	32	750	23,324	98,000	-15,707

### **Farm Business Charts**

The Farm Business Chart is a tool which can be used in analyzing a business by drawing a line through the figure in each column which represents the current level of management performance. The figure at the top of each column is the average of the top 10 percent of the 219 farms for that factor. The other figures in each column are the average for the second 10 percent, third 10 percent, etc. **Each column of the chart is independent of the others.** The farms which are in the top 10 percent for one factor would not necessarily be the same farms which make up the 10 percent for any other factor.

The cost control factors are ranked from low to high, but the lowest cost is not necessarily the most profitable. In some cases, the "best" management position is somewhere near the middle or average. Many things affect the level of costs, and must be taken into account when analyzing the factors.

**Table 46.**

#### **FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS 219 New York Dairy Farms, 2002**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
22.1	1,096	26,070,804	25,939	5.5	23	63	1,348,521
13.1	577	13,521,669	24,156	4.0	18	49	1,116,565
9.9	397	8,759,377	23,267	3.4	17	45	974,408
7.5	293	6,374,929	22,426	3.1	16	41	884,130
5.7	195	3,992,743	21,679	2.9	15	38	785,112
4.3	142	2,942,120	20,935	2.7	14	34	692,994
3.5	110	2,070,554	19,685	2.4	13	31	605,540
2.9	83	1,514,427	18,018	2.1	12	28	516,862
2.3	66	1,140,734	16,056	1.8	10	24	424,069
1.6	42	674,145	12,330	1.2	7	18	295,997
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$422	19%	\$279	\$866	\$571	\$3.41		
576	24	390	1,026	759	3.97		
646	26	442	1,139	843	4.26		
721	28	487	1,215	914	4.53		
767	30	523	1,265	972	4.73		
829	31	563	1,332	1,027	4.99		
894	33	610	1,423	1,099	5.20		
939	34	661	1,548	1,165	5.43		
1,012	36	727	1,686	1,242	5.82		
1,140	42	945	2,124	1,372	6.97		

The profitability section shows the variation in farm income by decile and enables a dairy farmer to determine where he or she ranks by using several measures of farm profitability. Remember that each column is independently established and the farms making up the top decile in the first column will not necessarily be on the top of any other column. The dairy farmer who ranks at or near the top of most of these columns is in a very enviable position.

**Table 46. (continued)**

**FARM BUSINESS CHART FOR  
FARM MANAGEMENT COOPERATORS  
219 New York Dairy Farms, 2002**

Milk Receipts Per Cow	Milk Receipts Per Cwt.	Operating Cost Milk Production Per Cow	Operating Cost Milk Production Per Cwt.	Total Cost Milk Production Per Cow	Total Cost Milk Production Per Cwt.
\$3,383	\$15.11	\$1,117	\$7.37	\$2,074	\$12.10
3,103	13.58	1,590	8.65	2,558	12.95
2,995	13.26	1,842	9.35	2,772	13.58
2,900	13.04	1,990	9.97	2,907	14.06
2,797	12.92	2,119	10.48	3,022	14.62
<hr/>					
2,696	12.80	2,301	10.86	3,156	15.15
2,565	12.65	2,444	11.36	3,301	15.79
2,366	12.48	2,580	11.91	3,431	16.73
2,099	12.31	2,813	12.55	3,677	17.85
1,594	11.89	3,116	14.93	4,013	21.72

Net Farm Income Without Appreciation			Profitability Net Farm Income With Appreciation		Labor & Management Income	
Total	Per Cow	Operations Ratio	Total	Per Cow	Per Farm	Per Operator
\$311,300	\$800	0.23	\$490,988	\$1,018	\$169,943	\$102,486
111,164	544	0.17	190,585	695	46,398	31,785
74,548	422	0.13	120,125	540	19,765	12,137
48,934	321	0.10	76,473	429	6,293	4,230
31,650	250	0.08	51,347	340	-6,706	-4,145
<hr/>						
18,485	152	0.05	31,621	213	-17,073	-12,209
6,953	57	0.02	17,028	139	-31,884	-22,091
-3,847	-18	-0.01	5,335	51	-59,274	-40,962
-31,661	-193	-0.06	-21,619	-152	-105,558	-70,856
-173,275	-522	-0.20	-118,492	-453	-272,400	-204,262

Farm Business Charts for farms with freestall barns and 150 cows or less, 150 to 300 cows, and more than 300 cows, and farms with conventional barns with 60 cows or less and more than 60 cows are discussed in the supplemental section on pages 66-70.

## **Financial Analysis and Management**

Analysis and astute management of farm financial affairs must receive high priority if the farm business is to be successful and if the farm family is to achieve a reasonable living standard.

The farm finance checklist and the financial analysis chart are provided to serve as guidelines. Dairy farmers can determine how their financial management measures up by comparing with average data from other farms.

**Table 47.**

### **A FARM FINANCE CHECKLIST 219 New York Dairy Farms, 2002**

	Average 219 Farms		Average Top 10% Farms <sup>45</sup>	
<u>How farm assets are being used (average for the year):</u>				
Total assets (capital) per cow	\$6,794		\$6,523	
Farm assets in livestock	27%		27%	
Farm assets in farm real estate	38%		33%	
Farm assets in machinery	19%		20%	
<u>Measures of debt capacity &amp; debt structure:</u>				
Equity in the business	57%		65%	
Farm debt per cow	\$2,899		\$2,273	
Long term debt/asset ratio <sup>46</sup>	0.38		0.33	
Intermediate & current term debt/asset ratio <sup>46</sup>	0.46		0.36	
Intermediate & current term debt as % of total	65%		69%	
<u>Debt repayment ability:</u> <sup>47</sup>				
Cash flow coverage ratio	0.84		1.15	
Debt coverage ratio	0.70		1.52	
Debt payments made per cow	\$466		\$316	
Debt payments made as % of milk receipts	16%		11%	
<u>Indicators of annual financial progress:</u>				
	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>
Annual change in farm assets	+\$74,695	+3.8%	+\$257,669	+12.0%
Annual change in farm debts	+\$72,960	+9.0%	+\$91,054	+12.3%
Annual change in farm net worth	+\$1,735	+0.1%	+\$166,615	+11.9%

<sup>45</sup>Twenty-one farms with highest rates of return on all capital (without appreciation).

<sup>46</sup>Long or intermediate and current term debt divided by long or intermediate and current term assets.

<sup>47</sup>Average of 180 farms that participated in DFBS both in 2001 and 2002. Seventeen of the 21 top 10 percent farms participated both years.

The most profitable farms carried \$626 less debt per cow, the average equity in their businesses was 8 percent higher than that of the average of all 219 farms, and they had a greater ability to make 2002 debt payments.

Average farm debt grew 5.2 percentage points faster than assets during 2002 on the 219 dairy farms. Average farm net worth increased 0.1 percent.

The farm financial analysis chart is designed just like the farm business chart on pages 44-45 and may be used to measure the financial health of the farm business. Most of the financial measures are defined on pages 16, 18, 22, and 42 in this publication.

**Table 48.**

**FINANCIAL ANALYSIS CHART**  
**219 New York Dairy Farms, 2002**

Liquidity/Repayment							
Planned Debt Payments Per Cow	Available for Debt Service Per Cow	Cash Flow Coverage Ratio	Debt Coverage Ratio	Debt Payments as Percent of Milk Sales	Debt Per Cow	Working Capital as % of Total Expenses	Current Ratio
\$136	\$862	6.53	3.22	5%	\$272	41%	12.51
266	665	1.71	1.65	9	1,046	26	3.42
345	575	1.29	1.23	13	1,626	20	2.35
393	502	1.05	1.02	15	2,072	15	1.88
447	446	0.92	0.83	17	2,447	11	1.57
513	378	0.80	0.73	19	2,789	7	1.30
570	318	0.70	0.59	21	3,164	3	1.08
649	245	0.59	0.33	24	3,583	-2	0.85
749	138	0.38	0.02	29	3,990	-9	0.66
901	-220	-0.64	-1.36	36	5,658	-19	0.34
Solvency				Operational Ratios			
Leverage Ratio <sup>48</sup>	Percent Equity	Debt/Asset Ratio		Operating Expense Ratio	Interest Expense Ratio	Depreciation Expense Ratio	
		Current & Intermediate	Long Term				
0.03	97%	0.04	0.00	0.65	0.00	0.02	
0.15	87	0.15	0.00	0.71	0.01	0.04	
0.28	78	0.24	0.03	0.75	0.02	0.05	
0.38	73	0.32	0.16	0.78	0.03	0.07	
0.52	66	0.37	0.25	0.81	0.03	0.08	
0.69	60	0.42	0.33	0.83	0.04	0.09	
0.89	53	0.49	0.41	0.85	0.05	0.10	
1.17	46	0.57	0.54	0.88	0.06	0.11	
1.53	40	0.65	0.70	0.92	0.07	0.13	
9.33	25	0.90	1.02	1.05	0.10	0.18	
Efficiency (Capital)				Profitability			
Asset Turnover (ratio)	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Farm Assets Per Cow	Change in Net Worth With Appreciation	Percent Rate of Return with Appreciation on:		
					Equity	Investment <sup>49</sup>	
.73	\$1,144	\$618	\$4,832	\$264,759	64%	11%	
.62	1,935	888	5,717	96,454	8	7	
.57	2,234	1,038	6,164	46,852	5	5	
.52	2,486	1,194	6,539	21,703	2	3	
.48	2,725	1,320	6,871	5,483	0	2	
.45	3,008	1,458	7,454	-5,080	-2	1	
.41	3,359	1,651	8,058	-20,508	-4	-1	
.35	3,850	1,899	8,653	-43,685	-7	-3	
.31	4,483	2,220	9,564	-80,709	-13	-5	
.23	7,197	3,171	12,724	-255,995	-37	-10	

<sup>48</sup>Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.

<sup>49</sup>Return on all farm capital (no deduction for interest paid) divided by total farm assets.

### **Herd Size Comparisons**

The 219 New York dairy farms have been sorted into nine herd size categories and averages for the farms in each category are presented in Tables 49 through 53. Note that after the less than 50 cow category, the herd size categories increase by 25 cows up to 100 cows, by 50 cows up to 200 cows, by 100 cows up to 400 cows, and by 200 cows up to 600 cows.

As herd size increases, the net farm income profitability generally increases (Table 49). Net farm income without appreciation averaged \$14,699 per farm for the less than 50 cow farms and \$92,702 per farm for those with more than 600 cows. However, net farm income per cow decreases as herd size increases. No relationship to herd size exists with the other more comprehensive measures of profitability.

It is more than size of herd that determines profitability on dairy farms. Farms with 600 and more cows averaged \$95 net farm income per cow while the less than 50 cow dairy farms average \$387 net farm income per cow. The 200 to 299 herd size category had the second highest net farm income per cow at \$309. Other factors that affect profitability and their relationship to the size classifications are shown in Table 50.

**Table 49.**

#### **COWS PER FARM AND FARM FAMILY INCOME MEASURES 219 New York Dairy Farms, 2002**

Number of Cows	Number of Farms	Average Number of Cows	Net Farm Income Without Appreciation	Net Farm Income Per Cow	Labor & Management Income Per Operator	Return to All Capital Without Appreciation
Under 50	15	38	\$14,699	\$387	\$-8,330	-3.7%
50 to 74	29	62	16,501	266	-6,582	-2.4%
75 to 99	24	84	12,931	154	-11,737	-1.6%
100 to 149	34	122	22,280	183	-11,652	-1.5%
150 to 199	23	170	10,102	59	-26,555	-2.1%
200 to 299	19	256	79,227	309	12,768	2.5%
300 to 399	22	346	1,128	3	-41,470	-0.8%
400 to 599	24	493	89,355	181	2,453	2.2%
600 & over	29	973	92,702	95	-29,652	1.8%

This year, net farm income per cow did not exhibit the usual increase as herd size increased. All herd size categories saw a decrease in operating cost of producing milk from a year earlier. Net farm income per cow will increase as farms become larger if the costs of increased purchased inputs are offset by greater and more efficient output.

The farms with more than 600 cows averaged more milk sold per cow than any other size category (Table 50). With 23,724 pounds of milk sold per cow, farms in the largest herd size group averaged 19 percent more milk output per cow than the average of all herds in the summary with less than 600 cows.

The ability to reach high levels of milk output per cow with large herds is a major key to high profitability. Three times a day milking (3X) and supplementing with bST are herd management practices commonly used to increase milk output per cow in large herds. Many dairy farmers who have been willing and able to employ and manage the labor required to milk 3X have been successful. Only three percent of the 69 DFBS farms with less than 100 cows used a milking frequency greater than 2X. As herd size increased, the percent of herds using a higher milking frequency increased. Farms with 100 to 200 cows reported 12 percent of the herds milking more often than 2X, 200-299 cow herds reported 56 percent, 300-399 cow herds reported 68 percent, 400-599 cow herds reported 79 percent, and the 600 cow and larger herds reported 90 percent exceeding the 2X milking frequency.



**Table 50.**

**COWS PER FARM AND RELATED FARM FACTORS  
219 New York Dairy Farms, 2002**

Number of Cows	Avg. No. of Cows	Milk Sold Per Cow (lbs.)	Milk Sold Per Worker (cwt.)	Tillable Acres Per Cow	Forage DM Per Cow (tons)	Farm Capital Per Cow	Cost of Producing Milk/Cwt.	
							Operating	Total
Under 50	38	17,065	2,030	4.0	6.4	\$9,936	\$8.93	\$17.79
50 to 74	62	17,163	4,444	3.2	6.7	7,985	10.18	16.30
75 to 99	84	18,435	5,671	3.6	8.6	8,319	10.79	15.95
100 to 149	122	19,161	5,751	3.2	7.8	8,328	10.91	16.11
150 to 199	170	21,471	6,437	3.5	8.0	8,071	10.99	15.38
200 to 299	256	22,041	9,079	2.4	7.8	6,561	10.31	13.75
300 to 399	346	22,038	8,891	2.0	7.6	6,902	11.45	14.83
400 to 599	493	22,315	9,562	2.0	6.7	6,035	10.74	13.55
600 & over	973	23,724	11,834	1.8	7.6	6,491	11.21	13.86

Bovine somatotropin (bST), was used to a greater extent on the large herd farms. bST was used sometime during 2002 on 23 percent of the herds with less than 100 cows, 55 percent of the farms with 100 to 299 cows and on 79 percent of the farms with 300 cows and more.

Milk output per worker has historically shown a strong correlation with farm profitability. The farms with 100 cows or more averaged over 859,000 pounds of milk sold per worker while the farms with less than 100 cows averaged less than 405,000 pounds per worker.

In achieving the highest productivity per cow and per worker, the largest farms had the fewest crop acres per cow and below average forage dry matter harvested per cow. The farms with 400 to 599 cows had the most efficient use of farm capital with an average investment of \$6,035 per cow.

The 24 farms with 400 to 599 cows held their average total costs of producing milk to \$13.55 per hundredweight, \$1.95 below the \$15.50 average total cost of producing milk for the remaining 195 dairy farms (Table 50). The lower average costs of production plus a similar milk price gave the managers of the 400 to 599 farms profit margins (milk price less total cost of producing milk) that averaged \$1.84 per hundredweight above the average of the other 195 DFBS farms.

Tables 51 through 53 show progress of the farm businesses that have participated in DFBS in all of the last five years. These farms are analyzed using three herd size groups: less than 100 cows, 100 to 499 cows, and more than 500 cows.

A detailed list of accrual expenses, receipts and a profitability analysis is presented in Table 54, on pages 53 and 54 for the nine herd size categories. Purchased feed is the largest expense on all farms, regardless of size. However, large farms find hired labor expense as the second largest expense category.

Assets, liabilities and financial measures are presented in Table 55 on pages 55-58. Not all herd size categories saw an increase in net worth during 2002. The largest herd size category experienced an increase in net worth of over \$36,000. However, percent equity went down as assets increased. The largest herds had 51 percent equity; while the smaller herds averaged 77 percent.

Selected business factors by herd size group are presented in Table 56 on pages 59 and 60. Larger farms are, on average, more profitable; but no farm is large enough to guarantee a profit. For a more detailed analysis of large herd farms, see Dairy Farm Business Summary, New York Large Herd Farms, 300 Cows or Larger, 2002. For analysis of smaller herds, see Dairy Farm Business Summary, New York Small Herd Farms, 80 Cows or Fewer, 2002. Both publications are available from the Natural Resource, Agriculture, and Engineering Service (NRAES), P. O. Box 4557, Ithaca, New York 14852-4557 or order copies via the website: <http://www.nraes.org>

**Table 51.**

**PROGRESS OF FARM BUSINESSES WITH LESS THAN 100 COWS**  
Same 41 New York Dairy Farms, 1998 - 2002

Selected Factors	1998	1999	2000	2001	2002
Milk receipts per cwt. milk	\$15.73	\$15.05	\$13.60	\$16.17	\$12.94
<u>Size of Business</u>					
Average number of cows	65	66	67	67	63
Average number of heifers	51	52	52	52	50
Milk sold, cwt.	11,526	11,994	12,419	12,047	12,517
Worker equivalent	2.42	2.42	2.45	2.47	2.51
Total tillable acres	201	202	209	212	222
<u>Rates of Production</u>					
Milk sold per cow, lbs.	17,859	18,261	18,508	17,948	19,984
Hay DM per acre, tons	2.1	2.3	2.3	2.0	1.9
Corn silage per acre, tons	14	13	13	16	13
<u>Labor Efficiency</u>					
Cows per worker	27	27	27	27	25
Milk sold per worker, lbs.	476,267	495,638	506,885	487,742	498,676
<u>Cost Control</u>					
Grain & concn. purchased as % of milk sales	26%	25%	28%	26%	30%
Dairy feed & crop expense per cwt. milk	\$5.23	\$5.00	\$4.84	\$5.34	\$4.89
Operating cost of producing cwt. milk	\$11.33	\$11.14	\$10.31	\$11.96	\$10.08
Total cost of producing cwt. milk	\$16.24	\$16.27	\$15.27	\$17.73	\$15.60
Hired labor cost per cwt.	\$1.07	\$1.09	\$1.10	\$1.21	\$1.21
Interest paid per cwt.	\$0.85	\$0.82	\$0.86	\$0.84	\$0.70
Labor & machinery costs per cow	\$1,135	\$1,260	\$1,280	\$1,413	\$1,538
Replacement livestock expense	\$2,830	\$3,937	\$2,509	\$2,900	\$2,507
Expansion livestock expense	\$656	\$638	\$263	\$0	\$1,043
<u>Capital Efficiency</u>					
Farm capital per cow	\$6,993	\$7,109	\$7,369	\$7,918	\$8,707
Machinery & equipment per cow	\$1,194	\$1,283	\$1,357	\$1,494	\$1,649
Real estate per cow	\$3,436	\$3,364	\$3,476	\$3,724	\$4,069
Livestock investment per cow	\$1,505	\$1,580	\$1,654	\$1,785	\$1,974
Asset turnover ratio	0.46	0.45	0.42	0.45	0.37
<u>Profitability</u>					
Net farm income without appreciation	\$40,534	\$35,153	\$29,799	\$35,585	\$21,208
Net farm income with appreciation	\$46,519	\$44,241	\$38,930	\$53,813	\$21,812
Labor & management income per operator/manager	\$15,673	\$9,064	\$3,888	\$5,913	\$-4,563
Rate return on:					
Equity capital with appreciation	5.0%	3.3%	1.6%	4.8%	-3.6%
All capital with appreciation	5.5%	4.3%	3.2%	5.3%	-0.9%
All capital without appreciation	4.2%	2.4%	1.4%	1.8%	-1.0%
<u>Financial Summary, End Year</u>					
Farm net worth	\$316,564	\$329,335	\$346,518	\$382,782	\$380,528
Change in net worth with appreciation	\$26,453	\$18,972	\$19,160	\$32,730	\$-1,321
Debt to asset ratio	0.32	0.31	0.32	0.30	0.31
Farm debt per cow	\$2,285	\$2,223	\$2,401	\$2,439	\$2,434

**Table 52.**

**PROGRESS OF FARM BUSINESSES WITH 100-499 COWS**  
Same 58 New York Dairy Farms, 1998 - 2002

Selected Factors	1998	1999	2000	2001	2002
Milk receipts per cwt. milk	\$15.76	\$15.05	\$13.50	\$16.09	\$13.01
<u>Size of Business</u>					
Average number of cows	206	217	224	238	251
Average number of heifers	150	161	166	175	187
Milk sold, cwt.	42,123	45,950	47,733	51,222	55,089
Worker equivalent	5.59	5.74	5.81	6.41	6.64
Total tillable acres	539	549	557	588	605
<u>Rates of Production</u>					
Milk sold per cow, lbs.	20,448	21,180	21,295	21,534	21,951
Hay DM per acre, tons	3.0	2.8	3.2	2.8	3.1
Corn silage per acre, tons	16	16	15	17	15
<u>Labor Efficiency</u>					
Cows per worker	37	38	39	37	38
Milk sold per worker, lbs.	753,540	800,525	821,571	799,088	829,661
<u>Cost Control</u>					
Grain & concn. purchased as % of milk sales	24%	24%	26%	24%	30%
Dairy feed & crop expense per cwt. milk	\$4.80	\$4.59	\$4.45	\$4.84	\$4.82
Operating cost of producing cwt. milk	\$11.11	\$11.23	\$10.93	\$12.07	\$10.97
Total cost of producing cwt. milk	\$14.44	\$14.58	\$14.36	\$15.62	\$14.48
Hired labor cost per cwt.	\$1.87	\$1.95	\$2.08	\$2.24	\$2.40
Interest paid per cwt.	\$0.90	\$0.76	\$0.90	\$0.76	\$0.58
Labor & machinery costs per cow	\$1,074	\$1,174	\$1,218	\$1,312	\$1,308
Replacement livestock expense	\$9,761	\$14,777	\$13,540	\$14,125	\$12,142
Expansion livestock expense	\$15,435	\$13,086	\$14,271	\$18,200	\$13,939
<u>Capital Efficiency</u>					
Farm capital per cow	\$6,343	\$6,526	\$6,737	\$6,874	\$6,986
Machinery & equipment per cow	\$1,237	\$1,314	\$1,399	\$1,408	\$1,440
Real estate per cow	\$2,532	\$2,524	\$2,583	\$2,586	\$2,618
Livestock investment per cow	\$1,511	\$1,527	\$1,618	\$1,753	\$1,842
Asset turnover ratio	0.60	0.57	0.54	0.62	0.52
<u>Profitability</u>					
Net farm income without appreciation	\$147,893	\$121,216	\$64,115	\$136,805	\$35,506
Net farm income with appreciation	\$171,264	\$147,380	\$102,363	\$206,855	\$70,164
Labor & management income per operator/manager	\$54,802	\$36,771	\$5,967	\$43,818	\$-14,372
Rate return on:					
Equity capital with appreciation	14.5%	10.1%	4.7%	14.0%	0.9%
All capital with appreciation	12.1%	9.0%	5.9%	11.4%	2.4%
All capital without appreciation	10.3%	7.1%	3.3%	7.1%	0.4%
<u>Financial Summary, End Year</u>					
Farm net worth	\$882,306	\$947,837	\$984,879	\$1,118,751	\$1,116,739
Change in net worth with appreciation	\$111,726	\$72,954	\$39,549	\$129,755	\$-3,580
Debt to asset ratio	0.36	0.36	0.36	0.35	0.37
Farm debt per cow	\$2,306	\$2,351	\$2,435	\$2,447	\$2,577

**Table 53.****PROGRESS OF FARM BUSINESSES WITH MORE THAN 500 COWS**

Same 27 New York Dairy Farms, 1998 - 2002

Selected Factors	1998	1999	2000	2001	2002
Milk receipts per cwt. milk	\$15.51	\$15.09	\$13.54	\$16.01	\$13.04
<u>Size of Business</u>					
Average number of cows	682	715	760	821	875
Average number of heifers	542	552	591	648	689
Milk sold, cwt.	154,559	166,339	175,331	188,844	207,106
Worker equivalent	15.06	15.69	16.58	17.26	18.37
Total tillable acres	1,314	1,402	1,465	1,542	1,646
<u>Rates of Production</u>					
Milk sold per cow, lbs.	22,661	23,269	23,072	23,003	23,675
Hay DM per acre, tons	3.9	3.7	4.3	3.4	3.7
Corn silage per acre, tons	21	17	16	17	15
<u>Labor Efficiency</u>					
Cows per worker	45	46	46	48	48
Milk sold per worker, lbs.	1,026,290	1,060,160	1,057,483	1,094,115	1,127,414
<u>Cost Control</u>					
Grain & concn. purchased as % of milk sales	26%	25%	28%	25%	29%
Dairy feed & crop expense per cwt. milk	\$5.01	\$4.78	\$4.66	\$4.96	\$4.74
Operating cost of producing cwt. milk	\$11.62	\$11.23	\$11.53	\$12.14	\$11.30
Total cost of producing cwt. milk	\$14.04	\$13.75	\$14.03	\$14.73	\$13.93
Hired labor cost per cwt.	\$2.48	\$2.58	\$2.68	\$2.83	\$2.80
Interest paid per cwt.	\$0.81	\$0.71	\$0.89	\$0.80	\$0.58
Labor & machinery costs per cow	\$1,095	\$1,176	\$1,201	\$1,247	\$1,228
Replacement livestock expense	\$15,639	\$22,090	\$20,044	\$5,579	\$13,131
Expansion livestock expense	\$34,280	\$39,273	\$60,899	\$66,643	\$57,540
<u>Capital Efficiency</u>					
Farm capital per cow	\$5,687	\$6,052	\$6,187	\$6,205	\$6,298
Machinery & equipment per cow	\$995	\$1,058	\$1,076	\$1,044	\$1,076
Real estate per cow	\$2,149	\$2,262	\$2,305	\$2,315	\$2,288
Livestock investment per cow	\$1,481	\$1,511	\$1,549	\$1,650	\$1,769
Asset turnover ratio	0.72	0.67	0.61	0.72	0.60
<u>Profitability</u>					
Net farm income without appreciation	\$426,970	\$440,506	\$143,618	\$488,052	\$75,164
Net farm income with appreciation	\$541,675	\$504,108	\$251,508	\$755,437	\$221,574
Labor & management income per operator/manager	\$141,463	\$138,717	\$6,274	\$148,446	\$-34,761
Rate return on:					
Equity capital with appreciation	21.5%	17.1%	5.9%	23.3%	3.7%
All capital with appreciation	14.7%	12.1%	6.5%	15.7%	4.2%
All capital without appreciation	11.7%	10.6%	4.2%	10.4%	1.6%
<u>Financial Summary, End Year</u>					
Farm net worth	\$2,268,305	\$2,506,423	\$2,527,864	\$3,041,603	\$2,966,687
Change in net worth with appreciation	\$405,005	\$264,729	\$42,858	\$524,324	\$-28,201
Debt to asset ratio	0.44	0.45	0.47	0.44	0.47
Farm debt per cow	\$2,595	\$2,797	\$2,871	\$2,784	\$2,943

Table 54.

**FARM BUSINESS SUMMARY BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farm Size:	Less than 50 Cows	50 to 74 Cows	75 to 99 Cows	100 to 149 Cows
Number of farms		15	29	24	34
<u>ACCRUAL EXPENSES</u>					
Hired labor		\$2,922	\$9,706	\$21,867	\$42,715
Dairy grain & concentrate		23,036	42,266	64,027	96,380
Dairy roughage		2,170	4,759	3,538	1,775
Nondairy feed		13	90	27	74
Machine hire, rent & lease		1,582	3,304	4,104	7,917
Machine repairs & farm vehicle expense		6,054	11,747	14,964	24,380
Fuel, oil & grease		2,480	4,026	6,056	8,536
Replacement livestock		3,510	3,080	716	4,434
Breeding		1,472	2,389	4,643	4,560
Veterinary & medicine		2,754	4,596	6,477	10,983
Milk marketing		6,743	11,715	11,558	18,619
Bedding		735	1,135	1,847	3,243
Milking supplies		2,546	4,352	7,575	9,024
Cattle lease & rent		0	446	71	129
Custom boarding		0	1,080	1,258	3,028
bST expense		434	846	1,410	3,626
Other livestock expense		1,836	2,316	4,505	4,976
Fertilizer & lime		2,085	3,459	6,600	10,951
Seeds & plants		1,351	1,985	3,697	5,633
Spray & other crop expense		1,256	1,383	3,558	5,511
Land, building & fence repair		1,229	2,997	3,365	7,165
Taxes & rent		3,655	7,219	10,220	16,023
Utilities		3,397	6,895	8,025	10,682
Interest paid		4,437	8,208	11,826	14,833
Misc. (including insurance)		<u>3,182</u>	<u>5,525</u>	<u>7,882</u>	<u>10,373</u>
Total Operating Expenses		\$78,878	\$145,525	\$209,813	\$325,570
Expansion livestock		0	1,964	24	3,135
Machinery depreciation		7,100	8,435	15,206	22,908
Building depreciation		<u>3,067</u>	<u>3,623</u>	<u>5,721</u>	<u>8,779</u>
Total Accrual Expenses		\$89,045	\$159,547	\$230,764	\$360,392
<u>ACCRUAL RECEIPTS</u>					
Milk sales		\$83,075	\$137,077	\$201,469	\$308,024
Dairy cattle		5,268	10,335	7,736	19,698
Dairy calves		1,963	3,717	2,809	3,749
Other livestock		73	1,432	451	322
Crops		894	3,001	2,004	790
Misc. receipts		<u>12,471</u>	<u>20,487</u>	<u>29,226</u>	<u>50,090</u>
Total Accrual Receipts		\$103,744	\$176,048	\$243,695	\$382,672
<u>PROFITABILITY ANALYSIS</u>					
Net farm income (without appreciation)		\$14,699	\$16,501	\$12,931	\$22,280
Net farm income (with appreciation)		\$15,484	\$17,526	\$21,174	\$28,694
Labor & management income		\$-9,413	\$-9,281	\$-16,197	\$-21,790
Number of operators		1.13	1.41	1.38	1.87
Labor & management income/operator		\$-8,330	\$-6,582	\$-11,737	\$-11,652
Rates of return on:					
Equity capital without appreciation		-6.4%	-6.1%	-4.9%	-4.1%
Equity capital with appreciation		-6.1%	-5.8%	-3.1%	-3.2%
All capital without appreciation		-3.7%	-2.4%	-1.6%	-1.5%
All capital with appreciation		-3.5%	-2.2%	-0.4%	-0.9%

Table 54. (continued)

**FARM BUSINESS SUMMARY BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farm Size:	150 to 199 Cows	200 to 299 Cows	300 to 399 Cows	400 to 599 Cows	600 or More Cows
Number of farms		23	19	22	24	29
<u>ACCRUAL EXPENSES</u>						
Hired labor		\$88,047	\$112,023	\$191,123	\$264,902	\$630,164
Dairy grain & concentrate		132,972	220,141	303,943	394,030	892,494
Dairy roughage		2,868	9,786	14,918	38,393	65,520
Nondairy feed		0	0	0	81	252
Machine hire, rent & lease		11,856	23,906	28,877	31,333	79,271
Machine repairs & farm vehicle expense		37,392	42,217	60,115	63,680	125,345
Fuel, oil & grease		15,270	16,850	26,125	28,116	52,086
Replacement livestock		5,970	1,466	24,890	17,083	29,731
Breeding		6,727	9,829	15,294	20,979	49,672
Veterinary & medicine		18,310	25,838	43,028	63,290	140,251
Milk marketing		29,146	46,779	50,691	72,374	127,511
Bedding		4,747	13,158	15,751	22,625	59,161
Milking supplies		13,783	18,792	22,268	33,836	67,243
Cattle lease & rent		25	384	1,896	376	10,094
Custom boarding		7,712	18,158	19,915	41,810	63,882
bST expense		7,589	9,651	16,588	23,225	72,765
Other livestock expense		10,666	7,911	13,889	15,338	29,175
Fertilizer & lime		16,179	18,483	20,625	27,400	50,260
Seeds & plants		9,794	10,392	15,583	19,549	46,407
Spray & other crop expense		9,832	10,669	15,951	22,320	54,046
Land, building & fence repair		11,564	9,257	13,569	19,529	38,083
Taxes & rent		20,776	29,824	30,929	46,783	101,366
Utilities		15,692	20,475	28,563	34,500	65,438
Interest paid		16,867	35,188	48,213	63,569	141,583
Misc. (including insurance)		16,558	16,567	27,238	32,047	64,747
Total Operating Expenses		\$510,341	\$727,746	\$1,049,981	\$1,397,167	\$3,056,546
Expansion livestock		2,617	6,832	16,676	24,872	60,666
Machinery depreciation		32,478	48,509	64,340	77,319	157,588
Building depreciation		21,495	23,247	56,139	63,869	166,813
Total Accrual Expenses		\$566,931	\$806,334	\$1,187,136	\$1,563,227	\$3,441,613
<u>ACCRUAL RECEIPTS</u>						
Milk sales		\$464,647	\$732,496	\$995,193	\$1,412,812	\$3,004,758
Dairy cattle		32,978	57,251	74,775	102,079	260,458
Dairy calves		6,225	8,329	14,058	17,813	30,463
Other livestock		265	258	7,272	4,694	4,579
Crops		12,057	18,990	10,691	13,406	68,798
Misc. receipts		60,861	68,238	86,274	101,779	165,257
Total Accrual Receipts		\$577,033	\$885,561	\$1,188,264	\$1,652,582	\$3,534,315
<u>PROFITABILITY ANALYSIS</u>						
Net farm income (without appreciation)		\$10,102	\$79,227	\$1,128	\$89,355	\$92,702
Net farm income (with appreciation)		\$29,815	\$118,646	\$61,038	\$125,654	\$294,510
Labor & management income		\$-46,206	\$27,451	\$-70,913	\$5,224	\$-74,426
Number of operators		1.74	2.15	1.71	2.13	2.51
Labor & management income/operator		\$-26,555	\$12,768	\$-41,470	\$2,453	\$-29,652
Rates of return on:						
Equity capital without appreciation		-4.4%	0.7%	-4.9%	0.2%	-0.9%
Equity capital with appreciation		-2.5%	4.7%	-0.5%	2.4%	5.3%
All capital without appreciation		-2.1%	2.5%	-0.8%	2.2%	1.8%
All capital with appreciation		-0.6%	4.9%	1.7%	3.4%	5.0%

Table 55.

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farms with:		50 to 74 Cows	
	Less than 50 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31		
<b>ASSETS</b>				
Farm cash, checking & savings	\$1,723	\$1,525	\$3,672	\$3,196
Accounts receivable	5,612	5,393	12,544	11,488
Prepaid expenses	232	151	0	138
Feed & supplies	22,127	22,794	30,688	31,980
Livestock <sup>50</sup>	72,082	69,313	110,672	109,448
Machinery & equipment <sup>50</sup>	74,189	75,065	97,160	103,379
Farm Credit stock	492	517	1,016	964
Other stock & certificates	1,752	1,675	3,875	4,321
Land & buildings <sup>50</sup>	199,413	201,080	229,355	236,187
Total Farm Assets	\$377,622	\$377,514	\$488,982	\$501,101
Personal cash, checking & savings	\$9,215	\$6,487	\$3,364	\$2,882
Cash value of life insurance	8,357	8,240	10,554	10,380
Nonfarm real estate	5,848	6,757	5,432	5,432
Auto (personal share)	5,059	4,655	8,098	6,725
Stocks & bonds	3,120	3,409	17,781	16,729
Household furnishings	10,818	10,818	11,386	10,727
All other	1,227	678	16,100	12,555
Nonfarm Assets <sup>51</sup>	\$43,644	\$41,044	\$72,715	\$65,430
Farm & Nonfarm Assets	\$421,266	\$418,558	\$561,697	\$566,531
<b>LIABILITIES</b>				
Accounts payable	\$1,710	\$2,654	\$6,308	\$6,881
Operating debt	2,787	4,166	4,381	6,211
Short term	527	0	114	462
Advanced government receipt	0	0	0	0
Current Portion:				
Intermediate	6,707	7,587	10,676	13,396
Long Term	2,846	3,177	3,280	4,050
Intermediate <sup>52</sup>	33,194	32,903	70,914	75,449
Long term <sup>50</sup>	40,940	37,839	62,930	63,356
Total Farm Liabilities	\$88,711	\$88,327	\$158,602	\$169,805
Nonfarm Liabilities <sup>51</sup>	725	200	4,954	3,321
Farm & Nonfarm Liabilities	\$89,436	\$88,527	\$163,556	\$173,126
Farm Net Worth (Equity Capital)	\$288,911	\$289,187	\$330,380	\$331,296
Farm & Nonfarm Net Worth	\$331,830	\$330,031	\$398,141	\$393,405
<b>FINANCIAL MEASURES</b>				
	Less than 50 Cows		50 to 74 Cows	
Percent Equity	77%		66%	
Debt/asset ratio-long term	0.19		0.27	
Debt/asset ratio-intermediate & current	0.29		0.40	
Change in net worth with appreciation	\$276		\$916	
Total farm debt per cow	\$2,324		\$2,653	
Debt payments made per cow	\$421		\$406	
Debt payments as % of milk sales	19%		18%	
Amount available for debt service	\$14,769		\$13,065	
Cash flow coverage ratio for 2002	0.94		0.54	
Debt coverage ratio for 2002	0.89		0.63	

<sup>50</sup>Includes discounted lease payments.<sup>51</sup>Average of farms reporting nonfarm assets and liabilities for 2002.<sup>52</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 55. (cont'd)

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farms with:		100 to 149 Cows	
	75 to 99 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31		
<b>ASSETS</b>				
Farm cash, checking & savings	\$4,628	\$4,950	\$7,270	\$5,139
Accounts receivable	17,081	16,011	27,235	26,567
Prepaid expenses	0	0	660	107
Feed & supplies	46,747	44,617	78,076	73,951
Livestock <sup>53</sup>	160,720	155,248	231,310	229,032
Machinery & equipment <sup>53</sup>	135,514	136,507	228,112	237,844
Farm Credit stock	1,057	1,263	2,023	2,102
Other stock & certificates	8,405	8,526	14,341	16,214
Land & buildings <sup>53</sup>	325,027	331,211	420,248	431,851
Total Farm Assets	\$699,179	\$698,333	\$1,009,274	\$1,022,807
Personal cash, checking & savings	\$6,703	\$4,619	\$9,638	\$17,691
Cash value of life insurance	14,499	15,940	13,791	16,305
Nonfarm real estate	41,500	48,722	84,950	85,250
Auto (personal share)	7,450	7,314	8,015	8,085
Stocks & bonds	4,623	4,178	23,764	27,479
Household furnishings	10,194	10,222	9,975	10,025
All other	26,791	28,617	8,318	7,700
Nonfarm Assets <sup>54</sup>	\$111,760	\$119,612	\$158,451	\$172,535
Farm & Nonfarm Assets	\$810,939	\$817,945	\$1,167,725	\$1,195,342
<b>LIABILITIES</b>				
Accounts payable	\$9,548	\$14,360	\$8,642	\$18,475
Operating debt	6,247	8,838	12,024	12,459
Short term	4,468	1,468	550	6,496
Advanced government receipt	0	0	0	294
Current Portion:				
Intermediate	22,030	21,960	24,224	24,147
Long Term	8,030	6,934	7,361	7,528
Intermediate <sup>55</sup>	92,361	83,228	109,767	111,301
Long term <sup>53</sup>	90,544	89,178	99,123	104,084
Total Farm Liabilities	\$233,228	\$225,966	\$261,691	\$284,784
Nonfarm Liabilities <sup>54</sup>	2,476	554	5,634	4,851
Farm & Nonfarm Liabilities	\$235,704	\$226,520	\$267,325	\$289,635
Farm Net Worth (Equity Capital)	\$465,951	\$472,367	\$747,583	\$738,023
Farm & Nonfarm Net Worth	\$575,235	\$591,425	\$900,400	\$905,707
<b>FINANCIAL MEASURES</b>				
	75 to 99 Cows		100 to 149 Cows	
Percent equity	68%		72%	
Debt/asset ratio-long term	0.27		0.24	
Debt/asset ratio-intermediate & current	0.37		0.31	
Change in net worth with appreciation	\$6,416		\$-9,560	
Total farm debt per cow	\$2,628		\$2,297	
Debt payments made per cow	\$556		\$423	
Debt payments as % of milk sales	23%		17%	
Amount available for debt service	\$31,304		\$42,596	
Cash flow coverage ratio for 2002	0.68		0.88	
Debt coverage ratio for 2002	0.49		0.67	

<sup>53</sup>Includes discounted lease payments.<sup>54</sup>Average of farms reporting nonfarm assets and liabilities for 2002.<sup>55</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.



Table 55. (cont'd)

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farms with:		200 to 299 Cows	
	150 to 199 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31		
<b>ASSETS</b>				
Farm cash, checking & savings	\$8,660	\$7,913	\$6,448	\$8,243
Accounts receivable	45,315	46,049	65,002	62,301
Prepaid expenses	270	0	808	423
Feed & supplies	150,473	134,201	157,166	156,558
Livestock <sup>56</sup>	317,190	318,890	440,132	473,139
Machinery & equipment <sup>56</sup>	289,348	304,166	306,492	341,334
Farm Credit stock	2,855	3,127	2,911	3,425
Other stock & certificates	28,088	29,201	21,462	23,323
Land & buildings <sup>56</sup>	522,527	536,006	634,276	655,680
Total Farm Assets	\$1,364,725	\$1,379,553	\$1,634,696	\$1,724,426
Personal cash, checking & savings	\$2,101	\$2,074	\$1,044	\$1,178
Cash value of life insurance	16,990	17,280	41,571	41,517
Nonfarm real estate	65,401	66,902	32,944	33,000
Auto (personal share)	2,963	2,650	6,133	5,356
Stocks & bonds	7,099	4,836	81,660	67,397
Household furnishings	2,313	2,281	4,111	4,111
All other	11,188	10,674	1,715	1,625
Nonfarm Assets <sup>57</sup>	\$108,055	\$106,697	\$169,178	\$154,184
Farm & Nonfarm Assets	\$1,472,780	\$1,486,250	\$1,803,874	\$1,878,610
<b>LIABILITIES</b>				
Accounts payable	\$3,239	\$17,548	\$15,163	\$25,690
Operating debt	33,694	34,922	29,561	50,715
Short term	2,057	554	7,559	7,909
Advanced government receipt	0	0	277	0
Current Portion:				
Intermediate	42,408	42,526	54,244	55,622
Long Term	9,781	9,825	15,899	20,726
Intermediate <sup>58</sup>	149,475	166,485	267,543	289,124
Long term <sup>56</sup>	92,541	105,318	276,799	255,255
Total Farm Liabilities	\$333,194	\$377,178	\$667,046	\$705,041
Nonfarm Liabilities <sup>57</sup>	0	1,804	3,123	1,627
Farm & Nonfarm Liabilities	\$333,194	\$378,982	\$670,169	\$706,668
Farm Net Worth (Equity Capital)	\$1,031,531	\$1,002,375	\$967,650	\$1,019,385
Farm & Nonfarm Net Worth	\$1,139,586	\$1,107,268	\$1,133,705	\$1,171,942
<b>FINANCIAL MEASURES</b>				
	150 to 199 Cows		200 to 299 Cows	
Percent equity	73%		59%	
Debt/asset ratio-long term	0.20		0.39	
Debt/asset ratio-intermediate & current	0.32		0.42	
Change in net worth with appreciation	\$-29,156		\$51,735	
Total farm debt per cow	\$2,168		\$2,691	
Debt payments made per cow	\$490		\$592	
Debt payments as % of milk sales	18%		20%	
Amount available for debt service	\$66,062		\$122,680	
Cash flow coverage ratio for 2002	0.80		0.89	
Debt coverage ratio for 2002	0.53		0.86	

<sup>56</sup>Includes discounted lease payments.<sup>57</sup>Average of farms reporting nonfarm assets and liabilities for 2002.<sup>58</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 55. (cont'd)

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farms with:					
	300 to 399 Cows	400 to 599 Cows	More than 600 Cows			
	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
<b>ASSETS</b>						
Farm cash, checking & savings	\$9,167	\$13,429	\$27,002	\$21,199	\$24,277	\$32,932
Accounts receivable	88,019	85,498	106,707	95,221	219,192	190,060
Prepaid expenses	3,091	1,198	5,546	981	11,957	10,846
Feed & supplies	239,347	204,332	326,391	303,521	709,394	685,335
Livestock <sup>59</sup>	616,422	638,059	829,201	873,647	1,757,074	1,852,874
Machinery & equipment <sup>59</sup>	465,574	493,701	562,911	581,230	992,983	1,046,127
Farm Credit stock	5,962	5,862	7,516	10,079	15,911	17,600
Other stock & certificates	44,809	50,162	58,275	63,756	151,377	188,683
Land & buildings <sup>59</sup>	889,291	922,304	986,573	1,091,042	2,274,391	2,450,234
Total Farm Assets	\$2,361,683	\$2,414,545	\$2,910,121	\$3,040,676	\$6,156,556	\$6,474,691
Personal cash, checking & savings	\$2,364	\$2,404	\$2,078	\$2,279	\$9,400	\$2,662
Cash value of life insurance	9,085	10,364	7,358	6,675	50,199	54,665
Nonfarm real estate	9,091	9,091	0	0	6,071	6,071
Auto (personal share)	7,273	9,455	4,778	3,889	5,179	5,500
Stocks & bonds	30,624	30,501	25,663	30,460	45,722	39,389
Household furnishings	12,500	12,591	2,444	2,778	6,286	6,286
All other	0	0	572	219	11,908	35,827
Nonfarm Assets <sup>60</sup>	\$70,937	\$74,406	\$42,893	\$46,300	\$134,765	\$150,400
Farm & Nonfarm Assets	\$2,432,620	\$2,488,951	\$2,953,014	\$3,086,976	\$6,291,321	\$6,625,091
<b>LIABILITIES</b>						
Accounts payable	\$12,842	\$40,869	\$18,262	\$36,958	\$65,463	\$88,544
Operating debt	70,795	72,563	115,195	109,046	296,485	367,753
Short term	3,387	318	2,742	8,390	29,825	3,446
Advanced government receipts	0	0	0	0	249	483
Current Portion:						
Intermediate	85,131	85,204	143,591	149,035	204,640	227,364
Long Term	27,322	26,062	33,983	35,336	88,300	127,437
Intermediate <sup>61</sup>	390,544	425,911	564,801	629,389	1,108,258	1,267,932
Long term <sup>59</sup>	386,277	393,384	401,304	463,519	1,106,096	1,098,269
Total Farm Liabilities	\$976,298	\$1,044,311	\$1,279,879	\$1,431,673	\$2,899,316	\$3,181,227
Nonfarm Liabilities <sup>60</sup>	17,732	18,140	3,285	2,522	0	9,043
Farm & Nonfarm Liabilities	\$994,030	\$1,062,451	\$1,283,164	\$1,434,195	\$2,899,316	\$3,190,270
Farm Net Worth (Equity Capital)	1,385,385	1,370,234	1,630,242	1,609,003	3,257,240	3,293,464
Farm & Nonfarm Net Worth	\$1,438,590	\$1,426,500	\$1,669,850	\$1,652,781	\$3,392,005	\$3,434,821
<b>FINANCIAL MEASURES</b>						
	300 to 399 Cows	400 to 599 Cows	More than 600 Cows			
Percent equity	57%	53%	51%			
Debt/asset ratio-long term	.43	.42	.45			
Debt/asset ratio-intermediate & current	.44	.50	.52			
Change in net worth with appreciation	\$-15,151	\$-21,239	\$36,224			
Total farm debt per cow	\$2,958	\$2,785	\$3,194			
Debt payments made per cow	\$411	\$539	\$421			
Debt payments as % of milk sales	14%	19%	14%			
Amount available for debt service	\$173,150	\$218,718	\$417,561			
Cash flow coverage ratio for 2002	0.96	0.83	0.85			
Debt coverage ratio for 2002	0.66	0.68	0.77			

<sup>59</sup>Includes discounted lease payments.<sup>60</sup>Average of farms reporting nonfarm assets and liabilities for 2002.<sup>61</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 56.

**SELECTED BUSINESS FACTORS BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farms with:	Less than 50 Cows	50 to 74 Cows	75 to 99 Cows	100 to 149 Cows
Number of farms		15	29	24	34
<u>Cropping Program Analysis</u>					
Total Tillable acres		153	200	299	393
Tillable acres rented <sup>62</sup>		50	92	139	194
Hay crop acres <sup>62</sup>		102	132	199	212
Corn silage acres <sup>62</sup>		13	34	68	94
Hay crop, tons DM/acre		1.9	2.0	2.2	2.5
Corn silage, tons/acre		10.5	13.7	12.4	12.5
Oats, bushels/acre		0	0	0	41
Forage DM per cow, tons		6.4	6.7	8.6	7.8
Tillable acres/cow		4.0	3.2	3.6	3.2
Fertilizer & lime expense/tillable acre		\$13.63	\$17.30	\$22.07	\$27.87
Total machinery costs		\$20,947	\$32,525	\$47,131	\$75,390
Machinery cost/tillable acre		\$137	\$163	\$158	\$192
<u>Dairy Analysis</u>					
Number of cows		38	62	84	122
Number of heifers		28	43	67	93
Milk sold, lbs.		651,872	1,066,461	1,553,936	2,329,161
Milk sold/cow, lbs.		17,065	17,163	18,435	19,161
Operating cost of producing milk/cwt.		\$8.93	\$10.18	\$10.79	\$10.91
Total cost of producing milk/cwt.		\$17.79	\$16.30	\$15.95	\$16.11
Price/cwt. milk sold		\$12.74	\$12.85	\$12.97	\$13.22
Purchased dairy feed/cow		\$663	\$758	\$804	\$805
Purchased dairy feed/cwt. milk		\$3.87	\$4.41	\$4.35	\$4.21
Purchased grain & concentrate as % of milk receipts		28%	31%	32%	31%
Purchased feed & crop expense/cwt. milk		\$4.59	\$5.05	\$5.24	\$5.16
Cull rate		31.6%	27.4%	28.6%	30.3%
<u>Capital Efficiency</u>					
Farm capital/worker		\$202,994	\$206,268	\$255,020	\$250,874
Farm capital/cow		\$9,936	\$7,985	\$8,319	\$8,328
Farm capital/tillable acre owned		\$3,666	\$4,542	\$4,367	\$5,106
Real estate/cow		\$5,270	\$3,754	\$3,906	\$3,492
Machinery investment/cow		\$1,964	\$1,617	\$1,619	\$1,910
Asset turnover ratio		0.28	0.36	0.36	0.38
<u>Labor Efficiency</u>					
Worker equivalent		1.86	2.40	2.74	4.05
Operator/manager equivalent		1.13	1.41	1.38	1.87
Milk sold/worker, lbs.		350,469	444,359	567,130	575,101
Cows/worker		20	26	31	30
Work units/worker		246	265	331	315
Labor cost/cow		\$1,215	\$892	\$773	\$806
Labor cost/tillable acre		\$302	\$276	\$217	\$250

<sup>62</sup> Average of all farms, not only those reporting data.

Table 56. (cont'd)

**SELECTED BUSINESS FACTORS BY HERD SIZE**  
**219 New York Dairy Farms, 2002**

Item	Farms with: 150 to 199 Cows	200 to 299 Cows	300 to 399 Cows	400 to 599 Cows	600 or More Cows
Number of farms	23	19	22	24	29
<u>Cropping Program Analysis</u>					
Total Tillable acres	589	624	686	1,001	1,771
Tillable acres rented <sup>63</sup>	304	370	295	555	919
Hay crop acres <sup>63</sup>	262	343	355	440	778
Corn silage acres <sup>63</sup>	158	213	267	367	772
Hay crop, tons DM/acre	2.8	2.8	3.4	3.3	3.9
Corn silage, tons/acre	12.1	14.3	15.8	15.4	17.0
Oats, bushels/acre	58	0	0	61	0
Forage DM per cow, tons	8.0	7.8	7.6	6.7	7.6
Tillable acres/cow	3.5	2.4	2.0	2.0	1.8
Fertilizer & lime exp./tillable acre	\$27.47	\$29.62	\$30.07	\$27.37	\$28.38
Total machinery costs	\$111,834	\$147,678	\$203,439	\$229,052	\$465,268
Machinery cost/tillable acre	\$190	\$237	\$297	\$229	\$263
<u>Dairy Analysis</u>					
Number of cows	170	256	346	493	973
Number of heifers	126	206	248	360	761
Milk sold, lbs.	3,643,460	5,637,866	7,628,126	11,005,748	23,076,382
Milk sold/cow, lbs.	21,471	22,041	22,038	22,315	23,724
Operating cost of prod. milk/cwt.	\$10.99	\$10.31	\$11.45	\$10.74	\$11.21
Total cost of prod. milk/cwt.	\$15.38	\$13.75	\$14.83	\$13.55	\$13.86
Price/cwt. milk sold	\$12.75	\$12.99	\$13.05	\$12.84	\$13.02
Purchased dairy feed/cow	\$799	\$898	\$922	\$877	\$985
Purchased dairy feed/cwt. milk	\$3.73	\$4.08	\$4.18	\$3.93	\$4.15
Purchased grain & concentrate as % of milk receipts	29%	30%	31%	28%	30%
Purchased feed & crop expense/cwt. milk	\$4.71	\$4.78	\$4.86	\$4.56	\$4.80
Cull Rate	30.6%	29.7%	31.5%	29.4%	34.0%
<u>Capital Efficiency</u>					
Farm capital/worker	\$242,427	\$270,461	\$278,335	\$258,506	\$323,878
Farm capital/cow	\$8,071	\$6,561	\$6,902	\$6,035	\$6,491
Farm capital/tillable acre owned	\$4,815	\$6,612	\$6,123	\$6,671	\$7,421
Real estate/cow	\$3,113	\$2,519	\$2,618	\$2,107	\$2,428
Machinery investment/cow	\$1,746	\$1,265	\$1,386	\$1,160	\$1,048
Asset turnover ratio	0.43	0.55	0.52	0.57	0.59
<u>Labor Efficiency</u>					
Worker equivalent	5.66	6.21	8.58	11.51	19.50
Operator/manager equivalent	1.74	2.15	1.71	2.13	2.51
Milk sold/worker, lbs.	643,721	907,869	889,059	956,190	1,183,404
Cows/worker	30	41	40	43	50
Work units/worker	316	421	393	418	488
Labor cost/cow	\$838	\$671	\$697	\$661	\$718
Labor cost/tillable acre	\$242	\$275	\$352	\$326	\$394

<sup>63</sup> Average of all farms, not only those reporting data.

## **SUPPLEMENTAL INFORMATION**

Comparisons of business performance by farms buying or growing forages, types of housing and herd size, bST usage, rotational grazers, milking frequency, same farms over 10 years, and dairy region are presented in this section. Farm receipts and expenses per cow and per hundredweight of milk sold for different levels of milk output and herd size groups, plus additional data, are included.

A word of caution to the reader on the interpretation of these data: It is the combination of resources and practices, and implementation of business management strategies by farmers that determine business performance. Examining one factor, while not holding all others constant, can lead to erroneous conclusions of cause and effect relationships. As an example, farms using bST have higher pounds of milk sold per cow. Is it exclusively bST or is it that farms using bST would have higher milk production per cow without bST? Keep this distinction in mind when reviewing the following data.

### **Comparison for Farms That Buy All Feed Versus Farms That Grow Forages**

Farms specializing in only milk production are a growing trend in New York. In 2002, 17 participating farms purchased the majority of their feed, including all forages. Less than 10 acres of crops were harvested by the average farm. Table 57 highlights the income and expenses for these 17 farms compared to the income and expenses for 174 farms of similar size that grew their forages. Table 58 compares selected business factors for the two groups of farms. In 2002, the 17 farms buying forages averaged a higher rate of return on all capital by shipping more milk per cow with less capital investment and had an operating cost that was similar to the farms growing all forages.

### **Comparison by Type of Barn and Herd Size**

When analyzing a dairy farm business by comparing it to a group of farms, it is important that the group of farms have as many of the same physical characteristics as possible as the farm being analyzed. To assist in this endeavor, dairy farms in the summary have been divided into those with freestall and those with conventional housing. Conventional housing includes stanchion and tiestall barns. Within each group, is a further classification by size of the dairy herd. Table 59 on page 65 includes the average values for the resulting five groups of dairy farms. The average size in the five groups ranges from 45 cows on the small conventional farms to 646 cows on the largest freestall farms. The largest freestall farms averaged the highest milk output per cow and per worker, the lowest total cost of production and investment per cow, and the greatest returns to labor, management and capital. The small freestall farms showed average profits somewhat higher than the large conventional farm businesses.

Farm business charts have been computed for each of the five housing and herd size categories and are on pages 66-70. By comparing the farm's performance on the most appropriate business chart, a farm manager will be better able to evaluate his or her business performance.

### **Comparison of Farms by bST Usage**

Farms adopting bovine somatotropin (bST) sold more milk per cow and had larger herds (Table 65). Farms using bST were also more profitable by all measures except labor and management income per operator. However, they had higher operating costs of producing milk per hundredweight than farms not using bST.

Farms not using bST showed a 9.1 percent increase in pounds of milk sold per cow, from 17,425 pounds in 1998 to 19,015 pounds in 2002. Farms using bST increased milk sold per cow 6.5 percent, from 22,251 pounds per cow in 1998 to 23,706 pounds per cow in 2002. Farms that used bST in 1998 through 2002 were larger, and increased in size more rapidly than did farms not supplementing with bST. Farms not using bST increased by 17 cows, from an average of 111 cows in 1998 to 128 in 2002. Farms adopting bST increased by 102 cows, up to 481 cows in 2002. Both groups saw a decrease in net farm income in 2002 and the group using bST saw a decrease in net worth. Debt to asset ratio and debt per cow changed very little over the study period. The reader is again reminded that bST is not solely responsible for the total changes, size and other factors are also significant.

### **Comparison of Data, Same Farms, 1993 - 2002**

Follow ten years of growth, change and progress made by 65 New York DFBS farms in Table 66, pages 72 and 73. Milk receipts per hundredweight decreased two percent and net farm income without appreciation decreased 205 percent from 1993 to 2002. Care should be exercised in using these data to indicate change in the dairy industry since the composition of the sample of farms is different from the state as a whole, and there is considerable year-to-year variability in milk prices. 2002 was a low milk price year.

### **Receipts and Expenses per Hundredweight of Milk and Per Cow**

Average accrual receipts and expenses per cow and per hundredweight of milk sold are listed for 56 dairy farms selling less than 18,000 pounds of milk per cow, 75 farms with 18,000 to 22,000 pounds milk sold per cow, and 88 dairy farms selling 22,000 pounds and more in Table 67 on page 74. Table 68 on page 75 provides the same list of average accrual receipts and expenses for 53 farms averaging less than 80 cows per farm, 65 farms with 80 to 180 cows and 101 farms with 180 cows or more.

These data are very useful for forward planning or budgeting when a farmer or planner does not have complete and accurate data from his or her own farm business. It is important to use the costs and returns per unit of output that most closely fit the level of production and herd size that is included in the plan. For example, an expansion budget for a 20,000 pound herd should include higher feed costs per cow than a budget for an 18,000 pound herd. Herds with more than 180 cows must budget higher labor costs per cow than smaller herds. These data should also be adjusted to the operating characteristics of the farm being budgeted. Most farms are not average. It is always better to have data on the specific farm being budgeted.

### **Intensive Grazing Farms vs. Non-Grazing Farms**

In 2002, 30 of the DFBS cooperators practiced intensive grazing. This means the dairy herd was on pasture for three months or more and was moved to a new paddock every third day or less and at least 30 percent of the forage was from pasture. The farms using intensive grazing are compared with a control group of non-grazing farms in Table 69. The control group is a selection of non-grazing dairy farms of similar size. In 2002 average net farm income was somewhat higher on intensive grazing farms. Operating cost of producing milk was 48 cents per hundredweight lower while total costs were 68 cents per hundredweight lower than the costs of production on the control farms. Table 69 also includes a comparison of 10 profitable grazing farms to 27 profitable non-grazing farms. A publication containing detailed information on New York farms using intensive grazing is available from the Natural Resource, Agriculture, and Engineering Service (NRAES), P. O. Box 4557, Ithaca, New York 14852-4557 or order copies via the website: <http://www.nraes.org>

### **Comparison of Farms by Milking Frequency**

Thirty-two percent of the 219 DFBS farms utilized three times per day (3X) milking in 2002. Most of the remaining farms milked twice per day (2X). Two years of selected average business and cost of milk production factors from the two milking frequency groups are compared in Table 70.

In 2002, the 3X farms averaged 16 less cows per farm, sold two percent more milk per cow, decreased the total cost of producing milk by 6.8 percent, and showed an average \$264,502 decrease in net farm income, compared to the 3X farm averages for 2001. The 2X farms increased milk output per cow five percent, decreased total production costs \$1.46 per hundredweight but decreased average net farm income \$42,024 per farm in 2002 compared to 2001.

The 3X farms compared with the 2X farms averaged 19 percent more milk per cow and 53 percent additional milk per worker in 2002, similar to the differences found in 2001. In 2002, the average total cost of producing milk was 8 percent lower on 3X farms than on 2X dairies, similar to 2001. On the average, farmers milking 3X sold more milk per cow and per worker, produced milk at lower costs per hundredweight and received higher returns for their labor, management and capital than the average dairy farmer milking 2X. However, milking frequency was not the only, and probably not the most important, factor that contributed to financial success on these dairy farms. Comparison of herd size, crop yields, labor and capital efficiency indicates there are other important management differences contributing to higher profits.

### **Comparison of Dairy Farm Business Data by Region**

Average farm business summary data from five regions of the State are compared in Tables 71 and 72. The Northern New York Region averaged the highest net farm income (without appreciation). The largest average farm size and highest average rate of milk production came from the Western and Central Plain Region. Dairy farmers in this region have increased milk production 35.4 percent from 1992-2002, and they produced milk for an average total cost of \$14.05 per hundredweight in 2002. Total milk production has declined 11.5 percent from 1992-2002 in the Central Valleys Region (Figure 2). However, this is the region with the highest return per hundredweight to labor, management and capital.

### **Other Comparisons**

Twenty-seven dairy renter farms were smaller, on average, than the 219 owner-operated farms, but averaged higher labor and management incomes than the average for 219 owned dairy farms (Table 73). A forthcoming publication contains detailed information on New York dairy renters (see <http://www.nraes.org>). Data for the top 10 percent of farms by rate of return on all capital without appreciation is presented in Table 74. Additional data for the top 10 percent of farms is presented in many of the first 46 tables of this publication. Summary data for the 219 specialized dairy farms are presented in Table 75.

Table 57.

INCOME & EXPENSE COMPARISON FOR FARMS BUYING MAJORITY OF FORAGES VERSUS SIMILAR SIZE FARMS GROWING FORAGES, 2002				
Item	17 Farms Buying Majority of Forages		174 Similar Size Farms Growing Forages	
Number of cows	186		188	
Pounds of Milk Sold	4,119,619		4,047,141	
<u>Income</u>	<u>Per Cow</u>	<u>Per Cwt.</u>	<u>Per Cow</u>	<u>Per Cwt.</u>
Milk sold	\$2,852	\$12.87	\$2,790	\$12.96
Dairy cattle	282	1.28	188	0.87
Dairy calves	71	0.32	37	0.17
Other livestock	0	0.00	10	0.05
Crops	-1	0.00	40	0.19
Miscellaneous	269	1.21	287	1.33
Total Accrual Receipts	\$3,473	\$15.68	\$3,350	\$15.56
<u>Expenses</u>				
Hired labor	\$369	\$1.66	\$462	\$2.14
Dairy grain & concentrate	827	3.73	832	3.87
Dairy roughage	468	2.11	28	0.13
Nondairy	2	0.01	0	0.00
Machinery hire, rent/lease	70	0.32	74	0.35
Machinery repairs/vehicle expense.	75	0.34	176	0.82
Fuel, oil & grease	43	0.19	72	0.33
Replacement livestock	149	0.67	36	0.17
Breeding	42	0.19	44	0.21
Veterinary & medicine	104	0.47	113	0.52
Milk marketing	141	0.64	159	0.74
Bedding	46	0.21	40	0.18
Milking supplies	81	0.37	73	0.34
Cattle lease/rent	10	0.04	2	0.01
Custom boarding	39	0.17	57	0.27
bST expense	21	0.10	41	0.19
Other livestock expenses	34	0.15	42	0.19
Fertilizer & lime	2	0.01	72	0.33
Seeds & plants	2	0.01	46	0.21
Spray, other crop expenses	1	0.00	56	0.24
Land/bldg/fence repair	33	0.15	47	0.22
Taxes	30	0.13	53	0.25
Rent & lease	35	0.16	61	0.28
Insurance	20	0.09	40	0.18
Utilities	78	0.35	84	0.39
Interest paid	194	0.87	124	0.58
Miscellaneous	31	0.14	38	0.17
Total Operating Expenses	\$2,946	\$13.30	\$2,867	\$13.32
Expansion livestock	\$65	\$0.29	\$27	\$0.13
Machinery depreciation	117	0.53	178	0.83
Building depreciation	114	0.52	115	0.54
Total Accrual Expenses	\$3,243	\$14.64	\$3,188	\$14.81
Net Farm Income (without appreciation)	\$231	\$1.04	\$162	\$0.75

Table 58.

**SELECTED BUSINESS FACTORS FOR FARMS BUYING MAJORITY OF FORAGES  
VERSUS SIMILAR SIZE FARMS GROWING FORAGES, 2002**

Selected Factors	17 Farms Buying Majority of Forages	174 Similar Size Farms Growing Forages
<u>Size of Business</u>		
Average number of cows	186	188
Average number of heifers	117	144
Milk sold, lbs.	4,119,619	4,047,141
Worker equivalent	3.81	5.36
Total tillable acres	124	504
Tillable acres harvested	50	485
<u>Rates of Production</u>		
Milk sold per cow, lbs.	22,163	21,529
Hay DM per acre, tons	1.7	2.8
Corn silage per acre, tons	0.0	14.2
<u>Labor Efficiency &amp; Costs</u>		
Cows per worker	49	35
Milk sold/worker, lbs.	1,081,265	755,064
Hired labor cost/cwt.	\$1.66	\$2.14
Hired labor cost/worker	\$34,434	\$26,628
Hired labor cost as % of milk sales	12.9%	16.5%
<u>Cost Control</u>		
Grain & concentrate purchased as % of milk sales	29%	30%
Grain & concentrate per cwt. milk	\$3.73	\$3.87
Dairy feed & crop expense per cwt. milk	\$5.87	\$4.78
Labor & machinery costs/cow	\$955	\$1,317
Total farm operating costs per cwt. sold	\$13.30	\$13.32
Interest costs per cwt. milk	\$0.88	\$0.58
Milk marketing costs per cwt. milk sold	\$0.64	\$0.74
Operating cost of producing cwt. of milk	\$10.79	\$10.84
<u>Capital Efficiency (average for the year)</u>		
Farm capital per cow	\$5,536	\$7,053
Machinery & equipment per cow	\$690	\$1,486
Asset turnover ratio	0.64	0.49
<u>Income Generation</u>		
Gross milk sales per cow	\$2,852	\$2,790
Gross milk sales per cwt.	\$12.87	\$12.96
Net milk sales per cwt.	\$12.24	\$12.22
Dairy cattle sales per cow	\$282	\$188
Dairy calf sales per cow	\$71	\$37
<u>Profitability</u>		
Net farm income without appreciation	\$42,911	\$30,532
Net farm income with appreciation	\$60,380	\$48,487
Labor & management income per operator/manager	\$12,482	\$-10,263
Rate of return on equity capital without appreciation	-1.6%	-3.0%
Rate of return on all capital without appreciation	2.9%	-1.2%
<u>Cash flow</u>		
Principal & interest payments per cow, 2002	\$467	\$505
Net cash flow	\$115,239	\$123,924
<u>Financial Summary</u>		
Farm net worth, end year	\$379,860	\$847,617
Farm net worth change from last year, %	6.3%	-0.6%
Debt to asset ratio	0.64	0.37
Farm debt per cow	\$3,574	\$2,543



Table 59.

**SELECTED BUSINESS FACTORS BY TYPE OF BARN AND HERD SIZE**  
**199 New York Dairy Farms, 2002**

Item	Farms with:	Conventional		Freestall		
		<= 60 Cows	>60 Cows	<=150 Cows	151-300 Cows	≥300 Cows
Number of farms		26	36	33	33	71
<u>Cropping Program Analysis</u>						
Total Tillable acres		167	313	335	591	1,229
Tillable acres rented <sup>64</sup>		65	129	174	340	639
Hay crop acres <sup>64</sup>		113	196	180	294	553
Corn silage acres <sup>64</sup>		22	58	86	191	508
Hay crop, tons DM/acre		2.0	2.2	2.3	2.8	3.6
Corn silage, tons/acre		12.1	13.5	12.5	13.2	16.4
Oats, bushels/acre		30	46	0	62	61
Forage DM per cow, tons		7.1	7.8	7.4	7.9	7.4
Tillable acres/cow		3.7	3.4	3.1	2.8	1.9
Fertilizer & lime expense/tillable acre		\$13.11	\$23.47	\$29.61	\$31.98	\$28.31
Total machinery costs		\$25,126	\$57,250	\$61,740	\$133,161	\$316,549
Machinery cost/tillable acre		\$150	\$183	\$184	\$225	\$258
<u>Dairy Analysis</u>						
Number of cows		45	91	107	213	646
Number of heifers		33	72	77	165	492
Milk sold, lbs.		773,417	1,678,840	1,994,618	4,735,073	14,987,890
Milk sold/cow, lbs.		17,290	18,483	18,568	22,215	23,187
Operating cost of producing milk/cwt.		\$9.10	\$10.37	\$11.20	\$10.71	\$11.12
Total cost of producing milk/cwt.		\$16.94	\$16.18	\$16.44	\$14.33	\$13.90
Price/cwt. milk sold		\$12.74	\$12.97	\$13.41	\$12.86	\$12.96
Purchased dairy feed/cow		\$695	\$738	\$846	\$891	\$953
Purchased dairy feed/cwt. milk		\$4.04	\$4.00	\$4.54	\$4.01	\$4.11
Purchased grain & concentrate as % of milk receipts		29%	30%	33%	30%	29%
Purchased feed & crop expense/cwt milk		\$4.74	\$4.90	\$5.52	\$4.82	\$4.76
<u>Capital Efficiency</u>						
Farm capital/worker		\$209,207	\$241,759	\$260,109	\$262,119	\$300,559
Farm capital/cow		\$9,438	\$8,581	\$8,192	\$7,199	\$6,453
Farm capital/tillable acre owned		\$4,164	\$4,244	\$5,479	\$6,109	\$7,066
Real estate/cow		\$4,774	\$3,733	\$3,676	\$2,752	\$2,383
Machinery investment/cow		\$1,976	\$1,861	\$1,731	\$1,487	\$1,123
Asset turnover ratio		0.30	0.37	0.39	0.50	0.57
<u>Labor Efficiency</u>						
Worker equivalent		2.03	3.23	3.37	5.85	13.87
Operator/manager equivalent		1.21	1.54	1.76	1.90	2.22
Milk sold/worker, lbs.		380,994	519,765	591,875	809,414	1,080,598
Cows/worker		22	28	32	36	47
Labor cost/cow		\$1,070	\$806	\$803	\$742	\$699
Labor cost/tillable acre		\$288	\$234	\$256	\$267	\$368
<u>Profitability &amp; Balance Sheet Analysis</u>						
Net farm income (without appreciation)		\$18,037	\$15,781	\$17,197	\$43,002	\$66,940
Labor & management income/operator		\$ -7,069	\$-13,452	\$-10,491	\$-5,038	\$-21,125
Rate return on all capital with appreciation		-2.5%	-0.1%	-1.0%	1.9%	4.1%
Farm debt/cow		\$2,285	\$2,071	\$2,653	\$2,514	\$3,088
Percent equity		75%	75%	67%	65%	52%

<sup>64</sup> Average of all farms, not only those reporting data.

Table 60.

**FARM BUSINESS CHART FOR SMALL CONVENTIONAL STALL DAIRY FARMS**  
**26 Conventional Stall Dairy Farms with 60 or Less Cows, New York, 2002**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
3.04	60	1,142,159	23,203	4.7	26	37	680,158
3.00	58	1,087,089	22,069	2.9	18	33	581,547
2.62	52	1,073,250	21,489	2.7	16	31	485,566
2.29	50	989,795	21,276	2.3	15	27	471,412
2.14	50	882,582	20,638	2.1	13	24	447,114
-----							
2.00	44	815,830	18,454	2.1	12	22	395,644
1.90	42	739,533	16,253	2.1	11	21	340,726
1.61	39	637,428	14,351	1.9	10	20	322,892
1.50	35	478,007	11,279	1.4	9	18	259,980
1.14	31	288,036	8,545	1.2	7	14	170,537
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$262	18%	\$198	\$940	\$322	\$3.38		
418	22	355	1,231	505	3.76		
513	24	455	1,343	645	4.11		
575	27	498	1,533	760	4.24		
618	29	575	1,770	848	4.35		
-----							
678	31	658	1,858	922	4.71		
775	33	698	1,953	991	5.01		
841	35	752	2,044	1,041	5.47		
904	38	806	2,204	1,103	6.10		
1,101	51	972	2,500	1,314	8.00		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec.		Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
			Total	Per Cow			
\$3,138	\$6.12	\$12.92	\$52,474	\$1,104	\$21,592	\$37,609	
2,929	7.19	14.35	36,571	949	12,767	15,821	
2,741	7.75	15.35	32,817	727	9,360	13,893	
2,657	8.17	16.20	28,311	653	5,649	9,894	
2,514	8.98	17.11	25,407	512	-779	6,721	
-----							
2,346	9.37	17.98	18,457	398	-4,263	2,820	
2,111	10.06	18.49	13,858	313	-9,329	-1,150	
1,857	10.64	20.22	9,777	267	-14,064	-7,427	
1,406	11.82	24.35	3,500	80	-18,711	-13,982	
1,005	15.48	28.09	-14,797	-310	-62,193	-30,281	

Table 61.

**FARM BUSINESS CHART FOR LARGE CONVENTIONAL STALL DAIRY FARMS**  
**36 Conventional Stall Dairy Farms with More Than 60 Cows, New York, 2002**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
6.85	173	3,517,857	23,588	3.2	19	46	847,783
4.24	120	2,235,710	21,737	3.0	17	41	781,006
3.96	108	1,970,575	20,952	2.9	16	37	703,740
3.58	97	1,744,848	20,281	2.7	16	34	641,261
3.17	85	1,666,685	19,307	2.4	15	31	574,060
-----							
3.00	79	1,571,486	18,274	2.2	14	29	533,307
2.75	76	1,393,495	17,018	2.1	13	27	501,028
2.54	72	1,242,817	16,127	1.8	11	26	427,258
2.18	68	1,127,840	15,439	1.5	9	24	370,621
1.50	65	1,005,499	14,099	1.1	6	17	324,348
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$408	18%	\$260	\$930	\$585	\$3.34		
529	23	410	1,085	735	3.80		
591	24	492	1,213	771	3.98		
633	27	521	1,282	805	4.46		
705	29	546	1,382	895	4.97		
-----							
730	33	578	1,466	938	5.40		
793	35	638	1,603	1,016	5.70		
882	37	758	1,698	1,065	6.10		
938	39	826	1,773	1,139	6.36		
1,159	48	1,416	2,286	1,359	7.36		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec.		Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
			Total	Per Cow			
\$3,129	\$7.38	\$12.39	\$85,219	\$741	\$39,332	\$70,316	
2,777	8.29	13.70	51,636	576	17,140	42,958	
2,663	8.84	14.41	40,123	516	8,266	36,489	
2,577	9.25	15.37	33,608	425	2,703	21,118	
2,477	10.00	16.07	23,611	303	-6,106	4,016	
-----							
2,361	10.80	16.74	16,329	168	-11,219	-681	
2,239	11.59	17.37	8,282	103	-16,396	-11,901	
2,088	12.39	18.27	3,128	39	-24,910	-23,157	
1,998	13.20	19.24	-15,230	-199	-59,343	-38,173	
1,809	16.14	22.41	-52,038	-536	-102,122	-81,761	

Table 62.

**FARM BUSINESS CHART FOR SMALL FREESTALL DAIRY FARMS**  
**33 Freestall Barn Dairy Farms with 150 or Less Cows, New York, 2002**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
5.84	146	3,247,938	24,088	4.7	23	51	987,946
4.43	140	2,746,918	22,478	3.1	18	44	814,394
4.30	132	2,531,513	21,405	3.0	17	40	726,531
3.98	124	2,406,473	20,350	2.8	15	37	660,292
3.64	117	2,332,116	19,274	2.5	14	33	636,687
-----							
3.22	113	1,968,724	18,914	2.3	12	32	616,193
2.87	104	1,744,476	17,707	2.1	11	31	580,368
2.55	90	1,480,398	16,918	1.9	9	29	529,081
2.23	76	1,292,997	14,490	1.6	7	27	462,491
1.81	63	948,590	11,657	1.2	6	22	318,663
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$489	23%	\$313	\$922	\$634	\$4.14		
598	27	424	1,073	783	4.56		
643	31	456	1,190	866	4.82		
707	32	506	1,250	890	5.12		
748	34	539	1,351	950	5.43		
-----							
880	34	612	1,446	1,146	5.71		
946	35	649	1,532	1,187	5.87		
999	36	689	1,582	1,216	6.18		
1,053	39	754	1,634	1,300	6.65		
1,158	43	884	1,933	1,404	8.46		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec.		Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
			Total	Per Cow			
\$3,177	\$8.06	\$13.11	\$74,708	\$661	\$27,415	\$91,885	
3,008	9.37	14.54	61,971	579	17,512	43,413	
2,851	10.16	15.28	44,860	490	7,567	34,996	
2,716	10.55	15.74	37,812	417	-285	16,132	
2,608	10.76	16.32	26,079	269	-9,009	9,827	
-----							
2,546	11.12	16.70	17,397	128	-11,862	-1,832	
2,350	11.55	17.11	8,858	77	-15,899	-12,242	
2,222	12.32	17.71	-39	3	-21,804	-26,363	
1,952	13.47	18.62	-15,986	-168	-37,410	-51,461	
1,610	16.96	23.60	-45,859	-400	-64,630	-86,442	

Table 63.

**FARM BUSINESS CHART FOR MEDIUM FREESTALL DAIRY FARMS**  
**33 Freestall Barn Dairy Farms with 151-300 Cows, New York, 2002**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
9.98	289	7,058,624	26,651	4.5	19	57	1,314,584
7.42	277	6,279,950	24,766	3.9	18	50	1,029,075
6.90	263	5,952,419	23,844	3.4	17	44	950,123
6.33	247	5,598,207	22,947	3.1	16	41	916,467
6.06	233	4,938,964	22,396	3.0	15	40	894,970
5.58	202	4,272,306	21,995	2.9	14	40	862,227
5.31	183	3,903,536	21,706	2.8	13	37	821,902
4.95	174	3,778,193	21,115	2.7	13	34	729,011
4.20	159	3,551,740	20,053	2.3	10	28	644,662
3.41	154	3,231,415	18,427	1.5	7	23	516,172
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$554	21%	\$401	\$923	\$740	\$3.58		
730	25	489	1,099	909	4.10		
775	27	557	1,229	977	4.45		
796	28	607	1,275	1,028	4.68		
836	30	615	1,317	1,051	5.02		
895	32	644	1,357	1,095	5.12		
933	33	699	1,411	1,139	5.25		
965	34	729	1,570	1,241	5.35		
1,040	35	785	1,754	1,279	5.57		
1,147	40	1,001	2,259	1,399	5.82		
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec.		Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
			Total	Per Cow			
\$3,345	\$8.01	\$12.01	\$218,869	\$839	\$65,424	\$182,070	
3,067	8.96	12.69	112,653	548	49,976	128,417	
2,997	9.46	13.38	90,477	390	25,149	96,164	
2,969	10.04	13.79	76,725	352	12,318	56,567	
2,882	10.80	14.25	65,859	321	7,276	24,649	
2,840	11.28	14.43	56,493	289	1,459	-7,554	
2,794	11.72	14.84	42,958	177	-4,608	-20,188	
2,740	12.12	15.63	4,759	13	-24,459	-44,948	
2,648	12.43	17.28	-44,102	-225	-88,725	-68,537	
2,395	15.23	19.01	-103,914	-601	-157,942	-129,423	

Table 64.

**FARM BUSINESS CHART FOR LARGE FREESTALL DAIRY FARMS**  
**71 Freestall Barn Dairy Farms with 300 or More Cows, New York, 2002**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
26.85	1,438	33,375,635	26,730	7.5	28	70	1,497,781
22.38	1,039	24,914,975	25,227	4.7	19	55	1,286,184
16.82	812	19,921,803	24,290	4.2	18	51	1,206,106
14.22	651	15,521,194	23,803	3.9	17	48	1,139,441
13.04	568	13,206,915	23,449	3.6	17	47	1,079,190
<hr/>							
11.40	499	11,707,064	23,093	3.2	15	44	1,004,950
10.45	433	9,447,569	22,657	3.1	15	42	963,397
9.25	390	8,515,842	22,111	2.9	14	39	905,762
8.25	356	7,883,906	21,338	2.6	13	37	825,804
7.03	323	6,584,485	17,496	1.7	11	32	697,945
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Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$626	22%	\$306	\$835	\$823	\$3.59		
732	25	391	996	935	4.19		
769	27	428	1,068	974	4.40		
821	28	459	1,147	1,014	4.60		
882	29	503	1,212	1,074	4.73		
<hr/>							
911	30	533	1,244	1,118	4.89		
930	31	561	1,289	1,148	5.03		
970	33	597	1,337	1,211	5.21		
1,045	34	642	1,439	1,263	5.38		
1,136	38	713	1,571	1,384	5.99		
<hr/>							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec.		Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
			Total	Per Cow			
\$3,544	\$8.96	\$11.79	\$471,354	\$661	\$181,847	\$472,425	
3,281	9.93	12.70	263,076	430	68,716	143,397	
3,146	10.20	13.01	168,151	296	35,940	105,539	
3,065	10.59	13.39	114,248	236	12,274	67,967	
3,004	10.89	13.73	91,535	167	-2,400	22,661	
<hr/>							
2,955	11.26	14.00	36,778	68	-26,105	-20,290	
2,872	11.65	14.55	1,926	4	-42,435	-56,598	
2,825	12.08	15.05	-19,585	-31	-61,693	-132,736	
2,728	12.57	15.53	-100,756	-168	-101,989	-199,083	
2,390	13.66	17.51	-304,292	-555	-338,297	-394,224	

Table 65.

bST NON-USERS VS. USERS Same 102 Farms, 1998 - 2002										
Selected Factors	39 Farms Not Using bST in 1998 - 2002					63 Farms Using bST in 1998 - 2002				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Size of Business										
Average number of cows	111	113	120	123	128	379	400	420	455	481
Average number of heifers	79	84	87	91	90	296	310	324	348	371
Milk sold, cwt.	19,409	20,686	21,519	22,456	24,252	84,422	91,148	95,936	104,143	113,975
Worker equivalent	3.23	3.25	3.38	3.48	3.59	9.11	9.55	9.86	10.50	11.07
Total tillable acres	287	288	296	306	311	790	841	875	921	972
Rates of Production										
Milk sold per cow, lbs.	17,425	18,335	17,959	18,253	19,015	22,251	22,769	22,833	22,906	23,706
Hay DM per acre, tons	2.2	2.3	2.5	2.2	2.4	3.6	3.3	3.7	3.3	3.3
Corn silage per acre, tons	11	11	10	11	9	18	16	15	16	15
Labor Efficiency										
Cows per worker	35	32	35	35	36	39	42	43	40	40
Milk sold per worker, lbs.	601,366	565,721	636,550	644,526	675,587	850,166	954,252	972,795	904,215	934,388
Cost Control										
Grain & concentrate purchased as percent of milk sales	25%	26%	27%	26%	31%	25%	24%	27%	24%	29%
Dairy feed and crop expense per cwt. milk	\$5.18	\$5.10	\$4.82	\$5.32	\$5.04	\$4.92	\$4.70	\$4.63	\$4.91	\$4.70
Labor and mach. costs per cow	\$1,102	\$1,246	\$1,241	\$1,374	\$1,413	\$1,117	\$1,221	\$1,267	\$1,326	\$1,328
Operating cost of producing milk per cwt.	\$10.87	\$10.70	\$9.78	\$11.58	\$9.85	\$11.08	\$11.35	\$11.22	\$12.08	\$11.02
Capital Efficiency (avg. for year)										
Farm capital per cow	\$6,326	\$6,612	\$6,866	\$7,382	\$7,639	\$6,405	\$6,619	\$6,841	\$6,881	\$6,942
Machinery and equip. per cow	\$1,225	\$1,374	\$1,477	\$1,556	\$1,632	\$1,160	\$1,229	\$1,304	\$1,298	\$1,347
Asset turnover ratio	0.53	0.52	0.46	0.49	0.40	0.67	0.64	0.59	0.68	0.56
Profitability										
Net farm income without apprec	\$64,013	\$63,347	\$43,740	\$71,223	\$33,792	\$255,993	\$232,584	\$85,006	\$259,071	\$49,104
Net farm income with apprec.	\$79,198	\$77,519	\$58,474	\$105,578	\$42,269	\$310,788	\$277,951	\$149,136	\$394,522	\$115,958
Labor & management income per operator/manager	\$29,291	\$20,682	\$4,130	\$21,719	\$-3,506	\$120,049	\$98,617	\$-3,445	\$102,083	\$-35,232
Rate return on equity capital with appreciation	34.5%	-5.7%	1.3%	7.7%	-4.7%	19.5%	12.9%	3.8%	16.9%	-0.6%
Rate return on all capital with appreciation	7.1%	5.6%	3.9%	7.1%	-0.3%	13.4%	9.9%	5.6%	12.1%	2.2%
Financial Summary (end of year)										
Farm net worth	\$478,888	\$505,492	\$530,607	\$603,777	\$608,429	\$1,356,889	\$1,474,286	\$1,490,530	\$1,743,070	\$1,711,409
Debt to asset ratio	0.30	0.29	0.29	0.28	0.29	0.38	0.39	0.41	0.38	0.41
Farm debt per cow	\$1,818	\$1,769	\$1,909	\$1,959	\$2,002	\$2,324	\$2,430	\$2,568	\$2,514	\$2,631

Table 66.

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 65 New York Dairy Farms, 1993 - 2002**

Selected Factors	1993	1994	1995	1996
Milk receipts per cwt. milk	\$13.23	\$13.48	\$13.11	\$15.04
<u>Size of Business</u>				
Average number of cows	175	192	211	226
Average number of heifers	138	148	161	170
Milk sold, cwt.	34,079	40,052	44,598	47,755
Worker equivalent	4.76	5.21	5.73	5.89
Total tillable acres	456	477	508	541
<u>Rates of Production</u>				
Milk sold per cow, lbs.	19,424	20,909	21,139	21,142
Hay DM per acre, tons	2.8	3.2	3.0	2.9
Corn silage per acre, tons	15	17	16	16
<u>Labor Efficiency</u>				
Cows per worker	37	37	37	38
Milk sold per worker, lbs.	715,945	768,762	778,321	810,776
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	29%	28%	26%	30%
Dairy feed & crop expense per cwt. milk	\$4.73	\$4.60	\$4.23	\$5.28
Operating cost of producing cwt. milk	\$10.10	\$10.33	\$10.30	\$11.88
Total cost of producing cwt. milk	\$13.60	\$13.41	\$13.27	\$14.84
Hired labor cost per cwt.	\$2.12	\$2.05	\$2.07	\$2.21
Interest paid per cwt.	\$0.71	\$0.73	\$0.82	\$0.80
Labor & machinery costs per cow	\$991	\$1,001	\$1,004	\$1,084
Replacement livestock expense	\$8,174	\$6,667	\$5,415	\$8,318
Expansion livestock expense	\$10,826	\$15,905	\$11,387	\$14,428
<u>Capital Efficiency</u>				
Farm capital per cow	\$6,329	\$6,298	\$6,156	\$6,226
Machinery & equipment per cow	\$1,123	\$1,118	\$1,098	\$1,097
Real estate per cow	\$2,736	\$2,706	\$2,625	\$2,645
Livestock investment per cow	\$1,528	\$1,536	\$1,504	\$1,498
Asset turnover ratio	0.51	0.53	0.52	0.58
<u>Profitability</u>				
Net farm income without appreciation	\$66,420	\$86,969	\$81,787	\$100,659
Net farm income with appreciation	\$85,964	\$102,213	\$95,202	\$112,669
Labor & management income per operator/manager	\$16,106	\$25,789	\$21,058	\$30,944
Rate return on:				
Equity capital with appreciation	5.9%	7.3%	5.8%	7.5%
All capital with appreciation	6.1%	7.1%	6.5%	7.4%
All capital without appreciation	4.4%	5.9%	5.4%	6.5%
<u>Financial Summary, End Year</u>				
Farm net worth	\$749,462	\$798,129	\$836,962	\$905,970
Change in net worth with appreciation	\$31,407	\$47,684	\$41,540	\$64,895
Debt to asset ratio	0.35	0.36	0.37	0.38
Farm debt per cow	\$2,182	\$2,228	\$2,260	\$2,387



Table 66. (continued)

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 65 New York Dairy Farms, 1993 - 2002**

1997	1998	1999	2000	2001	2002
\$13.75	\$15.74	\$15.11	\$13.43	\$15.96	\$12.93
242	256	269	284	305	316
185	204	209	219	236	253
52,157	54,844	59,644	63,151	67,568	72,527
6.26	6.53	6.77	6.95	7.41	7.76
569	593	623	640	667	697
21,588	21,465	22,203	22,262	22,149	22,944
2.6	3.3	3.1	3.5	3.0	3.3
16	21	16	15	17	15
39	39	40	41	41	41
833,176	839,877	881,010	908,649	911,852	934,628
33%	25%	24%	27%	25%	29%
\$5.33	\$4.97	\$4.66	\$4.49	\$4.84	\$4.68
\$11.69	\$11.42	\$11.19	\$11.12	\$12.16	\$11.08
\$14.42	\$14.43	\$14.30	\$14.18	\$15.32	\$14.14
\$2.13	\$2.26	\$2.33	\$2.38	\$2.53	\$2.65
\$0.86	\$0.84	\$0.71	\$0.84	\$0.73	\$0.55
\$1,039	\$1,128	\$1,216	\$1,219	\$1,283	\$1,313
\$8,229	\$8,606	\$14,171	\$14,230	\$10,843	\$7,172
\$15,206	\$13,404	\$12,964	\$22,085	\$29,057	\$13,549
\$6,262	\$6,380	\$6,592	\$6,665	\$6,682	\$6,845
\$1,102	\$1,171	\$1,219	\$1,255	\$1,242	\$1,263
\$2,626	\$2,570	\$2,601	\$2,566	\$2,559	\$2,601
\$1,504	\$1,524	\$1,547	\$1,602	\$1,697	\$1,810
0.53	0.62	0.60	0.56	0.64	0.53
\$59,349	\$174,616	\$160,597	\$69,983	\$168,350	\$39,897
\$62,619	\$211,143	\$194,343	\$117,346	\$243,634	\$79,842
\$6,247	\$65,566	\$53,632	\$4,435	\$55,303	\$-16,903
1.5%	16.0%	12.4%	5.0%	14.4%	1.4%
3.9%	12.5%	10.1%	5.9%	11.3%	2.7%
3.7%	10.3%	8.2%	3.4%	7.6%	0.9%
\$912,267	\$1,059,695	\$1,159,617	\$1,184,910	\$1,344,078	\$1,319,569
\$3,066	\$147,258	\$101,174	\$26,100	\$156,231	\$-20,901
0.41	0.38	0.37	0.38	0.37	0.39
\$2,534	\$2,457	\$2,479	\$2,515	\$2,527	\$2,665

Table 67.

**FARM RECEIPTS AND EXPENSES PER COW AND PER  
HUNDREDWEIGHT FOR THREE LEVELS OF MILK PRODUCTION  
219 New York Dairy Farms, 2002**

Item	56 Dairy Farms Milk/Cow <18,000#		75 Dairy Farms Milk/Cow 18,000-21,999#		88 Dairy Farms Milk/Cow ≥22,000#	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<u>ACCRUAL RECEIPTS</u>						
Milk sales	\$2,127	\$13.95	\$2,750	\$13.13	\$3,088	\$12.82
Dairy cattle	131	0.86	218	1.04	247	1.02
Dairy calves	35	0.23	35	0.17	35	0.14
Other livestock	7	0.04	11	0.05	6	0.03
Crops	28	0.18	65	0.31	50	0.21
Government receipts	220	1.44	182	0.87	146	0.61
All other	84	0.55	51	0.24	73	0.30
<b>TOTAL ACCRUAL RECEIPTS</b>	<b>\$2,632</b>	<b>\$17.25</b>	<b>\$3,311</b>	<b>\$15.81</b>	<b>\$3,644</b>	<b>\$15.13</b>
<u>ACCRUAL EXPENSES</u>						
<u>Labor</u> : Hired	\$288	\$1.89	\$462	\$2.21	\$621	\$2.58
<u>Feed</u> : Dairy grain & concentrate	657	4.31	806	3.85	913	3.79
Dairy roughage	57	0.37	25	0.12	72	0.30
Nondairy	1	0.00	0	0.00	0	0.00
<u>Machinery</u> : Mach. hire, rent & lease	51	0.34	64	0.30	85	0.35
Machinery repairs & vehicle expense	181	1.19	144	0.69	148	0.62
Fuel, oil & grease	60	0.40	64	0.31	61	0.25
<u>Livestock</u> : Replacement livestock	35	0.23	59	0.28	25	0.10
Breeding	27	0.18	42	0.20	51	0.21
Vet & medicine	64	0.42	115	0.55	140	0.58
Milk marketing	125	0.82	147	0.70	149	0.62
Bedding	19	0.12	35	0.17	59	0.25
Milking supplies	54	0.36	74	0.35	72	0.30
Cattle lease & rent	7	0.04	1	0.01	8	0.03
Custom boarding	16	0.11	100	0.48	52	0.21
bST expense	8	0.05	39	0.19	70	0.29
Other livestock expense	30	0.20	33	0.16	37	0.15
<u>Crops</u> : Fertilizer & lime	68	0.45	66	0.32	57	0.24
Seeds & plants	34	0.22	54	0.26	43	0.18
Spray & other crop expense	25	0.16	54	0.26	52	0.21
<u>Real Estate</u> : Land, building & fence repair	45	0.30	43	0.20	42	0.17
Taxes	63	0.41	51	0.25	39	0.16
Rent & lease	42	0.28	68	0.33	60	0.25
<u>Other</u> : Insurance	40	0.26	35	0.17	33	0.14
Utilities (farm share)	70	0.46	73	0.35	78	0.32
Interest paid	133	0.87	132	0.63	139	0.58
Miscellaneous	34	0.22	33	0.16	40	0.17
<b>TOTAL OPERATING EXPENSES</b>	<b>\$2,237</b>	<b>\$14.67</b>	<b>\$2,820</b>	<b>\$13.46</b>	<b>\$3,145</b>	<b>\$13.06</b>
Expansion livestock	11	0.07	20	0.10	65	0.27
Machinery depreciation	167	1.09	177	0.85	167	0.69
Building depreciation	70	0.46	138	0.66	154	0.64
<b>TOTAL ACCRUAL EXPENSES</b>	<b>\$2,485</b>	<b>\$16.29</b>	<b>\$3,155</b>	<b>\$15.06</b>	<b>\$3,530</b>	<b>\$14.66</b>

Table 68.

**FARM RECEIPTS AND EXPENSES PER COW AND PER  
HUNDREDWEIGHT FOR THREE HERD SIZE CATEGORIES  
219 New York Dairy Farms, 2002**

Item	53 Dairy Farms with <80 Cows		65 Dairy Farms with 80-180 Cows		101 Dairy Farms with ≥ 180 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<u>ACCRUAL RECEIPTS</u>						
Milk sales	\$2,286	\$12.78	\$2,589	\$13.02	\$2,975	\$12.98
Dairy cattle	153	0.86	169	0.85	240	1.04
Dairy calves	51	0.28	35	0.18	34	0.15
Other livestock	16	0.09	3	0.01	8	0.03
Crops	27	0.15	41	0.21	55	0.24
Government receipts	287	1.61	297	1.49	136	0.59
All other	<u>51</u>	<u>0.28</u>	<u>84</u>	<u>0.43</u>	<u>67</u>	<u>0.29</u>
TOTAL ACCRUAL RECEIPTS	\$2,871	\$16.05	\$3,218	\$16.18	\$3,514	\$15.33
<u>ACCRUAL EXPENSES</u>						
<u>Labor</u> : Hired	\$183	\$1.02	\$394	\$1.98	\$586	\$2.56
<u>Feed</u> : Dairy grain & concentrate	684	3.82	781	3.93	878	3.83
Dairy roughage	63	0.35	22	0.11	62	0.27
Nondairy	1	0.01	0	0.00	0	0.00
<u>Machinery</u> : Mach. hire, rent & lease	53	0.30	64	0.32	78	0.34
Mach. repairs & vehicle expense	177	0.99	208	1.05	140	0.61
Fuel, oil & grease	64	0.36	79	0.40	59	0.26
<u>Livestock</u> : Replacement livestock	47	0.26	30	0.15	36	0.15
Breeding	50	0.28	41	0.20	46	0.20
Vet & medicine	78	0.43	98	0.49	132	0.58
Milk marketing	174	0.97	156	0.79	142	0.62
Bedding	18	0.10	30	0.15	53	0.23
Milking supplies	77	0.43	78	0.39	69	0.30
Cattle lease & rent	5	0.03	1	0.00	7	0.03
Custom boarding	14	0.08	37	0.19	68	0.29
bST expense	17	0.09	32	0.16	61	0.27
Other livestock expense	44	0.25	56	0.28	32	0.14
<u>Crops</u> : Fertilizer & lime	59	0.33	93	0.47	56	0.24
Seeds & plants	34	0.19	54	0.27	45	0.19
Spray & other crop expense	28	0.16	51	0.26	50	0.22
<u>Real Estate</u> : Land, building & fence repair	44	0.25	62	0.31	39	0.17
Taxes	81	0.46	68	0.34	39	0.17
Rent & lease	28	0.16	59	0.30	62	0.27
<u>Other</u> : Insurance	53	0.30	49	0.24	31	0.14
Utilities (farm share)	105	0.59	91	0.46	72	0.31
Interest paid	129	0.72	117	0.59	139	0.61
Miscellaneous	<u>40</u>	<u>0.22</u>	<u>36</u>	<u>0.18</u>	<u>38</u>	<u>0.16</u>
TOTAL OPERATING EXPENSES	\$2,352	\$13.15	\$2,785	\$14.00	\$3,022	\$13.18
Expansion livestock	19	0.10	20	0.10	53	0.23
Machinery depreciation	167	0.93	182	0.92	168	0.73
Building depreciation	<u>63</u>	<u>0.35</u>	<u>99</u>	<u>0.50</u>	<u>151</u>	<u>0.66</u>
TOTAL ACCRUAL EXPENSES	\$2,600	\$14.53	\$3,086	\$15.52	\$3,394	\$14.80

Table 69.

**INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS**  
**New York State Dairy Farms, 2002**

Item	All Intensive Grazing Farms <sup>65</sup>	Non-Grazing Farms <sup>66</sup>	Profitable Grazing Farms <sup>67</sup>	Profitable Non- Grazing Farms <sup>68</sup>
Number of farms	30	103	10	27
<b><u>Business Size &amp; Production</u></b>				
Number of cows	94	91	70	73
Number of heifers	68	68	55	53
Milk sold, lbs.	1,568,703	1,815,774	1,384,775	1,459,740
Milk sold/cow, lbs.	16,618	20,011	19,868	19,946
Milk plant test, % butterfat	3.79%	3.72%	3.85%	3.68%
Cull rate	24.5%	30.8%	25.7%	26.0%
Tillable acres, total	243	310	232	223
Hay crop, tons DM/acre	2.2	2.4	2.4	2.4
Corn silage, tons/acre	12.4	13.0	14.7	13.0
Forage DM/cow, tons	3.9	8.2	6.0	7.9
<b><u>Labor &amp; Capital Efficiency</u></b>				
Worker equivalent	2.59	3.10	2.56	2.48
Milk sold/worker, lbs.	605,677	585,734	540,928	588,605
Cows/worker	36	29	27	29
Farm capital/worker	\$213,043	\$239,732	\$173,075	\$224,224
Farm capital/cow	\$5,870	\$8,167	\$6,330	\$7,617
Farm capital/cwt. milk	\$35	\$41	\$32	\$38
Machinery & equipment per cow	\$1,109	\$1,834	\$1,610	\$1,645
<b><u>Milk Production Costs &amp; Returns</u></b>				
Selected costs/cwt.:				
Hired labor	\$1.39	\$1.48	\$1.32	\$1.01
Grain & concentrate	\$3.64	\$3.84	\$3.37	\$3.63
Purchased roughage	\$0.57	\$0.24	\$0.22	\$0.36
Replacements purchased	\$0.07	\$0.24	\$0.01	\$0.31
Vet & medicine	\$0.34	\$0.48	\$0.24	\$0.40
Milk marketing	\$0.83	\$0.83	\$0.93	\$0.85
Other dairy expenses	\$1.18	\$1.34	\$1.09	\$1.10
Operating cost of producing milk/cwt.	\$9.76	\$10.24	\$8.25	\$8.39
Total labor cost/cwt.	\$4.09	\$4.17	\$4.41	\$4.02
Operator resources/cwt.	\$2.13	\$2.29	\$2.50	\$2.65
Total cost of producing milk/cwt.	\$14.70	\$15.38	\$13.61	\$13.42
Average farm price/cwt.	\$12.94	\$12.82	\$13.09	\$12.88
<b><u>Related Cost Factors</u></b>				
Hired labor/cow	\$232	\$296	\$260	\$203
Total labor/cow	\$683	\$831	\$872	\$804
Purchased dairy feed/cow	\$703	\$814	\$711	\$797
Purchased grain & concentrate as % of milk receipts	28%	30%	26%	28%
Vet & medicine/cow	\$57	\$95	\$47	\$81
Machinery costs/cow	\$439	\$605	\$597	\$517
Fuel, oil & grease/cow	\$48	\$75	\$75	\$61
Feed & crop exp./cwt.	\$4.99	\$4.94	\$4.20	\$4.65
<b><u>Profitability Analysis</u></b>				
Net farm income (with appreciation)	\$35,636	\$26,173	\$57,228	\$48,399
Net farm income (without apprec.)	\$30,275	\$23,262	\$48,648	\$49,460
Net farm income per cow (w/o apprec.)	\$322	\$256	\$695	\$678
Net farm income per cwt. (w/o apprec.)	\$1.93	\$1.28	\$3.51	\$3.39
Labor & management income/operator	\$2,482	\$-6,816	\$20,027	\$16,845
Labor & mgmt. income/oper./cow	\$26	\$-75	\$286	\$231
Rates of return on:				
Equity capital with appreciation	-1.1%	-3.2%	5.4%	2.8%
All capital with appreciation	1.2%	-0.9%	5.6%	3.6%

<sup>65</sup>Farms grazing at least three months of year, changing paddock at least every three days, forage from pasture at least 30 percent, and no organic farms.

<sup>66</sup>Farms with similar herd size, as the 30 rotational grazing farms.

<sup>67</sup>Farms with net farm income per cow greater than \$490, had been grazing at least two years, and forage from pasture at least 40 percent.

<sup>68</sup>Farms with similar herd size as the 10 profitable grazing farms and net farm income per cow greater than \$490.

Table 70.

**SELECTED BUSINESS FACTORS BY MILKING FREQUENCY**  
**New York State Dairy Farms, 2001 & 2002**

Item	2x/Day Milking		3x/Day Milking	
	2001	2002	2001	2002
Number of farms	151	140	65	69
<u>Business Size &amp; Production</u>				
Number of cows	136	150	566	550
Number of heifers	104	115	424	433
Milk sold, lbs.	2,598,578	2,995,248	13,232,371	13,076,279
Milk sold/cow, lbs.	19,045	19,988	23,387	23,756
Milk plant test, % butterfat	3.73%	3.75%	3.61%	3.63%
Tillable acres, total	395	432	1,075	1,056
Hay crop, tons DM/acre	2.4	2.6	3.2	3.7
Corn silage, tons/acre	16.2	13.6	16.7	16.6
Forage DM/cow, tons	7.7	7.7	6.9	7.6
<u>Labor &amp; Capital Efficiency</u>				
Worker equivalent	3.99	4.34	12.40	12.38
Milk sold/worker, lbs.	651,273	690,149	1,067,127	1,056,242
Cows/worker	34	35	46	44
Farm capital/worker	\$251,647	\$263,497	\$298,218	\$292,849
Farm capital/cow	\$7,383	\$7,624	\$6,533	\$6,592
Farm capital/cwt. milk	\$38.64	\$38.18	\$27.94	\$27.73
<u>Milk Production Costs &amp; Returns</u>				
Selected costs/cwt.:				
Hired labor	\$2.09	\$2.16	\$2.52	\$2.55
Grain & concentrate	\$4.05	\$3.98	\$3.95	\$3.77
Purchased roughage	\$0.21	\$0.19	\$0.29	\$0.30
Replacements purchased	\$0.17	\$0.17	\$0.22	\$0.15
Veterinary & medicine	\$0.47	\$0.51	\$0.55	\$0.58
Milk marketing	\$0.74	\$0.77	\$0.59	\$0.61
Other dairy expenses	\$1.17	\$1.24	\$1.52	\$1.49
Operating costs/cwt.	\$12.11	\$10.83	\$12.19	\$11.05
Total labor costs/cwt.	\$3.93	\$3.84	\$2.96	\$3.03
Operator resources/cwt.	\$2.90	\$2.74	\$1.43	\$1.41
Total costs/cwt.	\$16.63	\$15.17	\$14.92	\$13.91
Average farm price/cwt.	\$16.29	\$13.27	\$15.86	\$12.87
Return over total costs/cwt.	\$-0.34	\$-1.90	\$0.94	\$-1.04
<u>Related Cost Factors</u>				
Hired labor/cow	\$400	\$431	\$589	\$607
Total labor/cow	\$750	\$767	\$692	\$721
Purchased dairy feed/cow	\$814	\$832	\$990	\$967
Purchased grain & concentrate as % of milk receipts	25%	30%	25%	29%
Veterinary & medicine/cow	\$91	\$101	\$130	\$138
Machinery costs/cow	\$600	\$565	\$533	\$508
<u>Profitability Analysis</u>				
Net farm income (without appreciation)	\$73,149	\$31,125	\$317,631	\$53,129
Labor & management income/operator	\$20,025	\$-8,240	\$92,203	\$-21,168
Rates of return on:				
Equity capital with appreciation	9.7%	0.3%	21.3%	2.8%
All capital with appreciation	8.6%	1.8%	14.6%	3.7%

Table 71.

**COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION**  
**219 New York Dairy Farms, 2002**

Item	West. & Cent. Plateau Region	West. & Cent. Plain Region	Northern New York	Central Valleys	No. Hudson & Southeastern NY
Number of farms	24	69	27	30	69
<u>ACCRUAL EXPENSES</u>					
Hired labor	\$96,259	\$290,582	\$144,537	\$112,554	\$81,935
Feed	163,027	458,559	276,959	209,539	145,899
Machinery	68,652	129,761	74,558	69,374	57,873
Livestock	107,614	310,840	171,947	168,489	103,114
Crops	30,604	70,342	43,940	42,583	29,792
Real estate	30,265	65,310	43,235	41,178	28,251
Other	54,212	137,545	88,229	71,882	45,121
Total Operating Expenses	\$550,633	\$1,462,938	\$843,404	\$715,599	\$491,985
Expansion livestock	10,577	25,242	18,114	6,849	5,611
Machinery depreciation	34,376	79,333	59,737	49,272	23,402
Building depreciation	22,112	72,101	52,139	48,449	11,037
Total Accrual Expenses	\$617,698	\$1,639,614	\$973,394	\$820,169	\$532,035
<u>ACCRUAL RECEIPTS</u>					
Milk sales	\$547,974	\$1,425,351	\$861,486	\$718,352	\$460,321
Livestock	40,452	130,608	87,183	69,657	44,012
Crops	8,467	22,627	16,672	16,790	9,381
Government Receipts	39,726	59,425	51,676	42,231	41,645
All other	9,286	35,092	12,357	22,204	11,329
Total Accrual Receipts	\$645,904	\$1,673,102	\$1,029,374	\$869,234	\$566,689
<u>PROFITABILITY ANALYSIS</u>					
Net farm income (w/o appreciation)	\$28,206	\$33,488	\$55,980	\$49,065	\$34,654
Net farm income (w/ appreciation)	\$58,959	\$106,000	\$120,596	\$92,349	\$47,941
Labor & management income	\$-20,873	\$-53,704	\$-6,788	\$-8,111	\$-15,118
Number of operators	1.73	1.92	1.67	1.93	1.83
Labor & mgmt. income/operator	\$-12,065	\$-27,971	\$-4,065	\$-4,203	\$-8,261
<u>BUSINESS FACTORS</u>					
Worker equivalent	5.15	10.51	7.11	6.14	5.14
Number of cows	185	484	300	258	160
Number of heifers	149	361	239	195	126
Acres of hay crops <sup>69</sup>	287	380	398	290	265
Acres of corn silage <sup>69</sup>	134	353	262	197	147
Total tillable acres	497	906	742	622	455
Pounds of milk sold	4,040,442	11,045,309	6,854,726	5,412,961	3,517,665
Pounds of milk sold/cow	21,860	22,807	22,846	21,010	21,940
Tons hay crop dry matter/acre	2.8	3.8	3.1	3.0	2.4
Tons corn silage/acre	14.0	16.6	13.8	15.9	14.0
Cows/worker	36	46	42	42	31
Pounds of milk sold/worker	784,552	1,050,933	964,096	881,590	684,371
% grain & conc. of milk receipts	29%	29%	31%	28%	31%
Feed & crop expense/cwt. milk	\$4.79	\$4.79	\$4.68	\$4.66	\$4.99
Fertilizer & lime/crop acre	\$25.20	\$26.89	\$21.48	\$24.36	\$34.66
Machinery cost/tillable acre	\$234	\$261	\$208	\$217	\$205

<sup>69</sup> Average of all farms in the region, not only those producing the crop.

<sup>72</sup>From Dairy Farm Business Summary data.

Table 73.

**FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION**  
**27 New York Dairy-Renter Farms,<sup>73</sup> 2002**

<u>ACCRUAL EXPENSES</u>			<u>ACCRUAL RECEIPTS</u>		
Labor: Hired		\$32,896	Milk sales		\$315,191
Feed: Dairy grain & concentrate		94,926	Dairy cattle		26,491
Dairy roughage		20,835	Dairy calves		6,608
Nondairy		29	Other livestock		232
Machinery: Machinery hire, rent & lease		8,101	Crops		1,913
Machinery repairs & farm vehicle expense		16,115	Government receipts		24,717
Fuel, oil, grease		6,557	Custom machine work		3,715
Livestock: Replacement livestock		13,515	Gas tax refund		132
Breeding		5,052	Other		6,720
Veterinary & medicine		9,999	TOTAL ACCRUAL RECEIPTS		\$385,719
Milk marketing		17,194			
Bedding		3,391	<u>PROFITABILITY ANALYSIS</u>		
Milking supplies		8,079	Net farm income (without appreciation)		\$39,962
Cattle lease & rent		30	Net farm income (with appreciation)		\$49,127
Custom boarding		7,087	Labor & management income/farm		\$21,941
bST expense		4,505	Number of operators		1.25
Other livestock expense		5,967	Labor & management income/operator		\$17,553
Crops: Fertilizer & lime		6,120	Rate of return on equity		
Seeds & plants		2,978	capital including appreciation		3.1%
Spray & other crop expense		5,155			
Real estate: Land, building & fence repair		4,383	<u>BUSINESS FACTORS</u>		
Taxes		1,776	Number of cows		118
Rent & lease		14,489	Number of heifers		82
Other:			Worker equivalent		2.91
Insurance		3,760	Total tillable acres		208
Utilities (farm share)		9,749	Milk sold per cow, lbs.		20,726
Interest paid		13,087	Hay DM per acre, tons		2.5
Miscellaneous		4,696	Corn silage per acre, tons		12.3
TOTAL OPERATING EXPENSES		\$320,471	Milk sold per worker, lbs.		837,535
Expansion livestock		\$5,821	Grain & concentrate as % milk sales		30%
Machinery depreciation		12,712	Feed & crop expense/cwt. milk		\$5.33
Building depreciation		6,753	Labor & machinery costs/cow		\$1,053
TOTAL ACCRUAL EXPENSES		\$345,757	Average price/cwt. milk		\$12.93
<hr/>			<hr/>		
<u>ASSETS</u>	<u>Jan. 1</u>	<u>Dec. 31</u>	<u>LIABILITIES</u>	<u>Jan. 1</u>	<u>Dec. 31</u>
Farm cash, checking & savings	\$10,263	\$7,967	Accounts payable	\$7,743	\$12,856
Accounts receivable	18,629	23,368	Operating debt	6,730	13,154
Prepaid expenses	846	330	Short-term	54	1,500
Feed & supplies	46,017	46,394	Advanced gov't. receipts	0	0
Dairy cows <sup>74</sup>	138,838	142,155	Current Portion:		
Heifers	60,576	65,013	Intermediate	29,500	28,689
Bulls & other livestock	861	830	Long Term	2,573	1,668
Machinery & equipment <sup>74</sup>	111,423	114,387	Intermediate <sup>75</sup>	121,498	115,480
Farm Credit stock	1,994	2,123	Long term <sup>74</sup>	59,513	65,532
Other stock & certificates	9,319	12,401	Total Farm Liabilities	\$227,611	\$238,878
Land & buildings <sup>74</sup>	67,506	79,282	Nonfarm Liabilities <sup>76</sup>	12,068	11,286
Total Farm Assets	\$466,272	\$494,250	Farm & Nonfarm Liabilities	\$239,679	\$250,164
Nonfarm Assets <sup>76</sup>	69,090	78,762	Farm Net Worth	\$238,661	\$255,372
Farm & Nonfarm Assets	\$535,362	\$573,012	Farm & Nonfarm Net Worth	\$295,683	\$322,848

<sup>73</sup> A renter owns no farm real estate or tillable land at the end of year.

<sup>74</sup> Includes discounted lease payments.

<sup>75</sup> Includes Farm Credit stock and discounted lease payments for cattle and machinery.

<sup>76</sup> Average of 17 farms reporting.



Table 74.

**FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION**  
**Average of 21 Top Ten Percent Farms by Rate of Return on All Capital**  
**(without appreciation), 2002**

<u>ACCRUAL EXPENSES</u>			<u>ACCRUAL RECEIPTS</u>		
Labor: Hired		\$192,161	Milk sales		\$1,038,913
Feed: Dairy grain & concentrate		281,284	Dairy cattle		107,311
Dairy roughage		23,040	Dairy calves		14,441
Nondairy		25	Other livestock		1,325
Machinery: Machinery hire, rent & lease		22,215	Crops		29,976
Machinery repairs & farm vehicle expense		49,035	Government receipts		56,002
Fuel, oil, grease		18,037	Custom machine work		6,862
Livestock: Replacement livestock		23,439	Gas tax refund		207
Breeding		19,555	Other		23,918
Veterinary & medicine		39,332	TOTAL ACCRUAL RECEIPTS		\$1,278,955
Milk marketing		46,842			
Bedding		11,677			
Milking supplies		22,590	<u>PROFITABILITY ANALYSIS</u>		
Cattle lease & rent		965	Net farm income (without appreciation)		\$221,279
Custom boarding		10,486	Net farm income (with appreciation)		302,897
bST expense		15,180	Labor & management income/operator		144,578
Other livestock expense		8,547	Rate of return on equity		
Crops: Fertilizer & lime		17,419	capital without appreciation		10.9%
Seeds & plants		12,197	Rate of return on all		
Spray & other crop expense		10,841	capital without appreciation		8.7%
Real estate: Land, building & fence repair		17,596			
Taxes		10,990	<u>BUSINESS FACTORS</u>		
Rent & lease		21,334	Number of cows		348
Other:			Number of heifers		258
Insurance		8,020	Worker equivalent		7.63
Utilities (farm share)		21,762	Total tillable acres		781
Interest paid		35,324	Milk sold per cow, lbs.		22,683
Miscellaneous		9,242	Hay DM per acre, tons		3.9
TOTAL OPERATING EXPENSES		\$949,136	Corn silage per acre, tons		19.4
			Milk sold per worker, lbs.		1,033,446
Expansion livestock		\$23,577	Grain & concentrate as % milk sales		27%
Machinery depreciation		45,446	Feed & crop expense/cwt. milk		\$4.37
Building depreciation		39,517	Labor & machinery costs/cow		\$1,128
TOTAL ACCRUAL EXPENSES		\$1,057,676	Average price/cwt. milk		\$13.18
<hr/>			<hr/>		
<u>ASSETS</u>	<u>Jan. 1</u>	<u>Dec. 31</u>	<u>LIABILITIES</u>	<u>Jan. 1</u>	<u>Dec. 31</u>
Farm cash, checking & savings	\$ 7,866	\$13,528	Accounts payable	\$5,426	\$12,141
Accounts receivable	76,626	78,507	Operating debt	127,197	161,923
Prepaid expenses	342	8,664	Short-term	1,059	814
Feed & supplies	277,253	323,160	Advanced gov't receipts	251	0
Dairy cows <sup>77</sup>	394,016	439,335	Current Portion:		
Heifers	184,657	203,032	Intermediate	72,544	72,750
Bulls & other livestock	1,402	1,770	Long Term	14,717	22,539
Machinery & equipment <sup>77</sup>	432,147	460,615	Intermediate <sup>78</sup>	290,785	303,378
Farm Credit stock	2,786	3,845	Long-term <sup>77</sup>	228,900	258,389
Other stock & certificates	70,482	75,852	Total Farm Liabilities	\$740,879	\$831,933
Land & buildings <sup>77</sup>	693,606	790,544	Nonfarm Liabilities <sup>79</sup>	732	11,872
Total Farm Assets	\$2,141,183	\$2,398,852	Farm & Nonfarm Liabilities	\$741,611	\$843,805
Nonfarm Assets <sup>79</sup>	96,106	104,263	Farm Net Worth	\$1,400,304	\$1,566,919
Farm & Nonfarm Assets	\$2,237,289	\$2,503,115	Farm & Nonfarm Net Worth	\$1,495,678	\$1,659,310

<sup>77</sup>Includes discounted lease payments.<sup>78</sup>Includes Farm Credit Stock and discounted lease payments for cattle and machinery.<sup>79</sup>Average of 11 farms reporting.

Table 75.

**FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION**  
**Average of 219 New York Dairy Farms, 2002**

<u>ACCRUAL EXPENSES</u>			<u>ACCRUAL RECEIPTS</u>		
Labor: Hired		\$161,155	Milk sales		\$858,783
Feed: Dairy grain & concentrate		254,117	Dairy cattle		67,254
Dairy roughage		16,975	Dairy calves		10,291
Nondairy		69	Other livestock		2,196
Machinery: Machinery hire, rent & lease		22,376	Crops		15,368
Machinery repairs & farm vehicle expense		44,600	Government receipts		48,354
Fuel, oil, grease		18,360	Custom machine work		3,496
Livestock: Replacement livestock		10,479	Gas tax refund		321
Breeding		13,606	Other		16,391
Veterinary & medicine		37,207	TOTAL ACCRUAL RECEIPTS		\$1,022,454
Milk marketing		43,198			
Bedding		14,443	<u>PROFITABILITY ANALYSIS</u>		
Milking supplies		20,909	Net farm income (without appreciation)		\$38,185
Cattle lease & rent		1,691	Net farm income (with appreciation)		82,482
Custom boarding		18,178	Labor & management income/operator		-14,243
bST expense		16,341	Rate of return on equity		
Other livestock expense		10,445	capital without appreciation		-2.2%
Crops: Fertilizer & lime		18,057	Rate of return on all		
Seeds & plants		13,418	capital without appreciation		0.7%
Spray & other crop expense		14,678			
Real estate: Land, building & fence repair		12,526	<u>BUSINESS FACTORS</u>		
Taxes		13,337	Number of cows		297
Rent & lease		17,903	Number of heifers		226
Other:			Worker equivalent		7.21
Insurance		10,261	Total tillable acres		660
Utilities (farm share)		22,423	Milk sold per cow, lbs.		22,312
Interest paid		40,372	Hay DM per acre, tons		3.1
Miscellaneous		11,162	Corn silage per acre, tons		15.5
TOTAL OPERATING EXPENSES		\$878,286	Milk sold per worker, lbs.		917,854
			Grain & concentrate as % milk sales		30%
Expansion livestock		\$14,051	Feed & crop expense/cwt. milk		\$4.79
Machinery depreciation		50,250	Labor & machinery costs/cow		\$1,245
Building depreciation		41,682	Average price/cwt. milk		\$12.98
TOTAL ACCRUAL EXPENSES		\$984,269			
<hr/>			<hr/>		
<u>ASSETS</u>	<u>Jan. 1</u>	<u>Dec. 31</u>	<u>LIABILITIES</u>	<u>Jan. 1</u>	<u>Dec. 31</u>
Farm cash, checking & savings	\$10,804	\$11,447	Accounts payable	\$16,956	\$29,487
Accounts receivable	68,105	62,203	Operating debt	68,422	80,016
Prepaid expenses	2,718	1,746	Short-term	6,088	3,383
Feed & supplies	206,013	194,385	Advanced gov't receipts	57	110
Dairy cows <sup>80</sup>	350,857	362,167	Current Portion:		
Heifers	176,457	186,301	Intermediate	68,594	72,740
Bulls & other livestock	2,767	3,080	Long Term	23,220	28,878
Machinery & equipment <sup>80</sup>	365,141	384,095	Intermediate <sup>81</sup>	325,621	360,873
Farm Credit stock	4,680	5,277	Long-term <sup>80</sup>	299,434	305,867
Other stock & certificates	39,526	46,240	Total Farm Liabilities	\$808,393	\$881,353
Land & buildings <sup>80</sup>	753,426	798,248	Nonfarm Liabilities <sup>82</sup>	4,319	4,592
Total Farm Assets	\$1,980,494	\$2,055,189	Farm & Nonfarm Liabilities	\$812,712	\$885,945
Nonfarm Assets <sup>82</sup>	104,103	107,186	Farm Net Worth	\$1,172,101	\$1,173,836
Farm & Nonfarm Assets	\$2,084,597	\$2,162,375	Farm & Nonfarm Net Worth	\$1,271,885	\$1,276,430

<sup>80</sup>Includes discounted lease payments.<sup>81</sup>Includes Farm Credit stock and discounted lease payments for cattle and machinery.<sup>82</sup>Average of 122 farms reporting.

**APPENDIX**

**PRICES, COSTS AND TRENDS  
IN THE NEW YORK DAIRY INDUSTRY**

The prices dairy farmers pay for a given quantity of goods and services has a major influence on farm production costs. The astute manager will keep close watch on unit costs and utilize the most economical goods and services.

**Table A1.****PRICES PAID BY NEW YORK FARMERS FOR SELECTED ITEMS, 1992-2002**

Year	Mixed Dairy Feed 16% Protein <sup>83</sup> (\$/ton)	Fertilizer, Urea 45-46%N <sup>83</sup> (\$/ton)	Seed Corn, Hybrid <sup>84</sup> (\$/80,000 kernels)	Diesel Fuel <sup>83</sup> (\$/gal)	Tractor 50-59 PTO <sup>84</sup> (\$)	Wage Rate All Hired Farm Workers <sup>85</sup> (\$/hr)
1992	174	221	71.80	0.910	18,850	6.42
1993	171	226	72.70	0.900	19,200	6.76
1994	181	233	73.40	0.853	19,800	6.96
1995	175	316	77.10	0.850	20,100	6.92
1996	226	328	77.70	1.020	20,600	7.19
1997	216	287	83.50	0.960	21,200	7.63
1998	199	221	86.90	0.810	21,800	7.63
1999	175	180	88.10	0.750	21,900	8.12
2000	174	201	87.50	1.270	21,800	8.74
2001	176	270	92.20	1.260	22,000	8.72
2002	178	232	92.00	1.028	21,900	9.36

SOURCE: NYASS, New York Agricultural Statistics. USDA, ASB, Agricultural Prices.

<sup>83</sup>Northeast region average. <sup>84</sup>United States average. <sup>85</sup>New York and New England combined.

Inflation, farm profitability, supply and demand all have a direct impact on the inventory values on New York dairy farms. The table below shows year-end (December) prices paid for dairy cows (replacements), an index of these cow prices, an index of new machinery prices (U.S. average), the average per acre value of farmland and buildings reported in January (February for 1986-89), and an index of the real estate prices.

**Table A2.****VALUES AND INDICES OF NEW YORK DAIRY FARM INVENTORY ITEMS, 1986-2002**

Year	Dairy Cows		Machinery <sup>86</sup>	Farm Real Estate	
	Value/Head	1977=100	1977=100	Value/Acre	1977=100
1986	770	156	178	843	144
1987	870	176	180	960	164
1988	900	182	189	993	169
1989	1,020	206	201	1,045	178
1990	1,060	214	209	1,014	173
1991	1,040	210	219	1,095	187
1992	1,090	220	226	1,139	194
1993	1,100	222	235	1,237	211
1994	1,100	222	249	1,260	215
1995	1,010	204	258	1,280	218
1996	1,030	208	268	1,260	215
1997	980	198	276	1,250	213
1998	1,050	212	286	1,280	218
1999	1,250	253	294	1,340	228
2000	1,250	253	301	1,410	240
2001	1,600	323	312	1,500	256
2002	1,400	283	320	1,600	273

SOURCE: NYASS, New York Agricultural Statistics and New York Crop and Livestock Report. USDA, ASB, Agricultural Prices.

<sup>86</sup>United States average; 1995 - 2002 are estimated due to discontinuation of 1977=100 series.

As the number of milk cow operations decreases, the average number of milk cows per operation increases as shown by Chart A1. There were 5,100 less milk cow operations in 2002 than there were in 1991. The average number of milk cows per operation has increased by 35 cows, or 57 percent over the same period. On January 1, 2002, 28 percent of the total milk cows were in herds with 50-99 head, 62.5 percent were in herds with over 100 milk cows, and 9.5 percent were in herds with less than 50 head.

Chart A1.

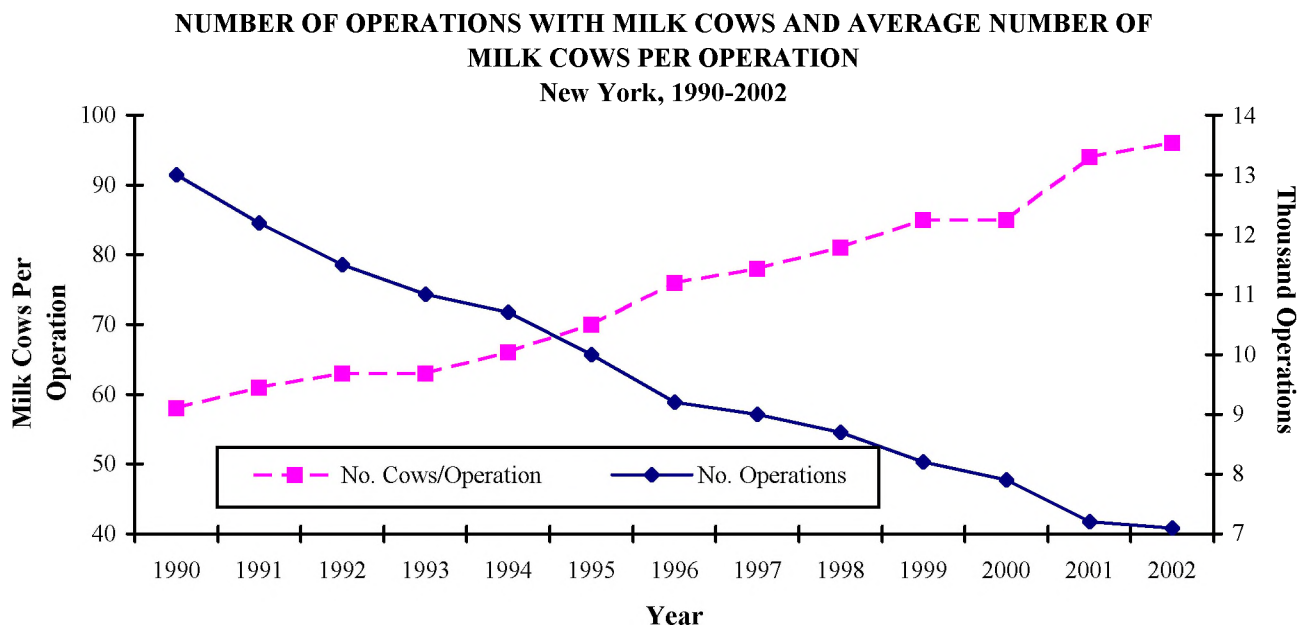


Table A3.

**MILK COW OPERATIONS AND MILK COW INVENTORY**  
by Herd Size, 1991 to 2002

MILK COW OPERATIONS BY HERD SIZE & TOTAL, 1991-2002 (Number of Milk Cows in Herd)							MILK COWS ON FARMS, JAN. 1 BY HERD SIZE & TOTAL, 1992-2002 (Number of Milk Cows in Herd)						
Year	1-29	30-49	50-99	100- 199 <sup>87</sup>	200 plus	Total	Year	1-29	30- 49	50- 99	100- 199 <sup>87</sup>	200 plus	Total
(Number of Operations)							(Thousand Head)						
1991	2,500	2,900	5,000	1,800		12,200	1991	27	116	319	288		750
1992	2,600	2,600	4,400	1,900		11,500	1992	24	111	314	291		740
1993	2,400	2,500	4,200	1,500	400	11,000	1993	22	102	285	190	131	730
1994	2,400	2,200	4,200	1,500	400	10,700	1994	22	87	297	189	130	725
1995	2,100	2,200	4,000	1,300	400	10,000	1995	21	92	277	178	142	710
1996	1,800	2,000	3,700	1,300	400	9,200	1996	19	79	259	189	154	700
1997	1,700	1,900	3,600	1,300	500	9,000	1997	18	73	245	189	175	700
1998	1,600	1,800	3,500	1,300	500	8,700	1998	18	73	238	182	189	700
1999	1,400	1,600	3,200	1,400	600	8,200	1999	14	70	218	189	211	702
2000	1,400	1,500	3,000	1,400	600	7,900	2000	14	63	203	196	224	700
2001	1,300	1,200	2,800	1,300	600	7,200	2001	13	54	194	181	228	670
2002	1,200	1,250	2,800	1,200	650	7,100	2002	14	51	189	165	257	675

<sup>87</sup> 100 plus category prior to 1993.

Source: NYASS, New York Agricultural Statistics, 2002-2003

## GLOSSARY AND LOCATION OF COMMON TERMS

**Accounts Payable:** Open accounts or bills owed to feed and supply firms, cattle dealers, veterinarians and other providers of farm services and supplies.

**Accounts Receivable:** Outstanding receipts from items sold or sales proceeds not yet received such as the payment for December milk sales received in January.

**Accrual Accounting:** (defined on page 11).

**Accrual Expenses:** (defined on page 13).

**Accrual Receipts:** (defined on page 13).

**Annual Cash Flow Statement:** (defined on page 20).

**Appreciation:** (defined on page 14).

**Asset Turnover Ratio:** (defined on page 42).

**Available for Debt Service per Cow:** Net cash available for debt service after deducting net personal withdrawals for family expenditures, divided by the average number of cows.

**Average Top 10% Farms:** Average of 21 farms with highest rate of return on all capital (without appreciation).

**Balance Sheet:** A "snapshot" of the business financial position at a given point in time, usually December 31. The balance sheet equates the value of assets to liabilities plus net worth.

**Barn Types:** Stanchion: cows are confined in a stall by a stanchion or neck chain. Freestall: cows move at will between open stalls and feeding areas. Combination: both stanchion and freestall barns used.

**bST Usage:** An estimate of percentage of herd that was injected with bovine somatotropin during the year.

**Business Records:** Account Book: any organized farm record book or ledger. Agrifax (mail-in): Farm Credit's recordkeeping service. On-Farm Computer: computerized business and financial records entered and kept on the farm. Other: accountant, recordkeeping association or no organized recordkeeping system.

**Capital Efficiency:** The amount of capital invested per production unit. Relatively high investments per worker with low to moderate investments per cow imply efficient use of capital. (See analysis, page 42).

**Capital Investment:** Commonly used as substitute term for farm capital or total farm assets.

**Cash Flow:** The movement of money in and out of the business over a given period of time, e.g. one year. (See Annual Cash Flow Statement, page 20).

**Cash Flow Coverage Ratio:** (defined on page 22).

**Cash From Nonfarm Capital Used in the Business:** Transfers of money from nonfarm savings or investments to the to the farm business where it is used to pay operating expenses, make debt payments and/or capital purchases.

**Cash Paid:** (defined on page 12).

**Cash Receipts:** (defined on page 13).

**Change in Accounts Payable:** (defined on page 13).

**Change in Accounts Receivable:** (defined under Accrual Receipts on page 13).

**Change in Advanced Government Receipts:** (defined under Accrual Receipts page 13).

**Change in Inventory:** (defined on page 12).

**Corporation:** Business is organized under state corporation law. Corporation is owned, operated, and managed by members of one or more farm families and owner/operators are corporate employees. Corporate accounts are modified to exclude operator wages and other compensation from operating expenses for DFBS use.

**Cost of Producing Milk, Whole Farm Method:** A procedure used to calculate costs of producing milk on dairy farms without using enterprise cost accounts. All non-milk receipts are assigned a cost equal to their sale value and deducted from total farm expenses to determine the costs of producing milk. (see page 30).

**Cost of Term Debt:** A weighted average of the cost of borrowed intermediate and long term capital used on the farm. Calculate by multiplying end of year principal of each loan that is borrowed by the interest rate for each loan at that time. Add up each amount that is calculated for each loan and then divide by total amount of borrowed funds. Do not include accounts payable, operating debt or advanced government receipts. This information is found on pages 8 & 9 of the data entry form.

**Culling Rate:** Culling rate is calculated by dividing the number of animals that left the herd for culling purposes and that died, by the average number of milking and dry cows for the year

**Current** (assets and liabilities): Farm inventories and operating capital that usually turnover annually, and the debt expected to be repaid within 12 months.

**Current Portion:** Principal due in the next year for intermediate and long term debt.

**Current Ratio:** Measures the extent to which current farm assets, if liquidated, would cover current farm liabilities. Calculated as current farm assets at end year divided by current farm liabilities at end year.

**Dairy Cash-Crop (farm):** Operating and managing this farm is the full-time occupation of one or more people, cropland is owned but crop sales exceed ten percent of accrual milk receipts.

**Dairy Farm Renter:** (dairy-renter) - Farm business owner/operator owns no tillable land and commonly rents all other farm real estate.

**Dairy Grain and Concentrate:** All grains, protein supplements, milk substitutes, minerals and vitamins purchased and fed to the dairy herd.

**Dairy Records:** DHIC: Dairy Herd Improvement Cooperative official milk production records. Owner Sampler: weights and samples are taken by farmer but tested by DHIC. Other: all other methods used to obtain periodic production data on individual cows. None: no milk production records on individual cows.

**Dairy Roughage:** All hay, silage or other fodder purchased and fed to the dairy herd.

**Death Rate:** The percentage of the average number of milking and dry cows that died during the year.

**Debt Coverage Ratio:** (defined on page 22)

**Debt Per Cow:** Total end-of-year debt divided by end-of-year number of cows.

**Debt to Asset Ratios:** (defined on page 18).

**Depreciation Expense Ratio:** The percentage of total accrual receipts that is charged to depreciation expense (machinery and building).

**Dry Matter:** The amount or proportion of dry material that remains after all water is removed. Commonly used to measure dry matter percent and tons of dry matter in feed.

**Equity Capital:** The farm operator/manager's owned capital or farm net worth.

**Expansion Livestock:** (defined on page 11).

**Farm Business Chart:** (see definition and application on page 44).

**Farm Debt Payments as Percent of Milk Sales:** Amount of milk income committed to debt repayment, calculated by dividing planned debt payments by total milk receipts. A reliable measure of repayment ability, see pages 22 and 47.

**Farm Debt Payments Per Cow:** Planned or scheduled debt payments per cow represent the repayment plan scheduled at the beginning of the year divided by the average number of cows for the year. This measure of repayment ability is used in the Financial Analysis Chart on page 47.

**Financial Lease:** A long-term non-cancelable contract giving the lessee use of an asset in exchange for a series of lease payments. The term of a financial lease usually covers a major portion of the economic life of the asset. The lease is a substitute for purchase. The lessor retains ownership of the asset.

**Hay Crop:** All hay land, including new seedings, harvested once or more as hay or hay crop silage.

**Hay Dry Matter:** see Dry Matter.

**Heifers:** Female dairy replacements of all ages.

**Hired Labor** (expenses): All wages, non-wage compensation, payroll taxes, benefits, and perquisites paid employees.

**Hired Labor Expense as % of Milk Sales:** The percentage of the gross milk receipts that is used for labor expense. Divide accrual hired labor expense by accrual milk sales.

**Hired Labor Expense per Hired Worker Equivalent:** The total cost to the farm per hired worker equivalent. Divide accrual hired labor expense by number of hired plus family paid worker equivalents.

**Income Statement:** A complete and accurate account of accrual adjusted farm business receipts and expenses used to measure net income over a period of time such as one year or one month.

**Intensive Grazing:** The dairy herd is on pasture at least three months of the year, changing paddock at least every three days and percent of forage from pasture is at least 30 percent.

**Interest Expense Ratio:** The percentage of total accrual receipts that is used for interest expense

**Intermediate** (assets and liabilities): Farm business property and associated debt that is turned over from one to ten years.

**Labor and Management Income:** (defined on page 15).

**Labor and Management Income Per Operator:** (defined on page 15).

**Labor Efficiency:** Production capacity and output per worker. (See analysis on pages 42 and 43).

**Labor Force:** Operator(s): Person or persons that run the farm and make the management decisions. An operator does not have to be a farm owner. Family Paid: all family members, excluding operators, that are paid for working on the farm. Family Unpaid: all family members, excluding the operators, that are not paid for farm work performed.

**Liquidity:** Ability of business to generate cash to make debt payments or to convert assets to cash.

**Long-Term** (assets and liabilities): Farm real estate and associated debt with typical life of ten or more years.

**Milk Marketing** (expenses): Milk hauling fees and charges, co-op dues, milk advertising and promotion expenses.

**Milking Frequency:** 2X/day: all cows were milked two times per day for the entire year. 3X/day: all cows were milked three times per day for the entire year. Other: any combination of 2X, 3X, and more frequent milking.



**Milking Systems:** Bucket and Carry: milk is transferred manually from milking unit to pail to tank. Dumping Station: milk is dumped from milking unit into transfer station and then pumped to tank. Pipeline: milking units are connected directly to milk transfer lines. Herringbone: milking parlor designed to move and milk cows in groups. Other Parlor: parlors in which cows move and are milked individually.

**Net Farm Income:** (defined on page 14).

**Net Farm Income from Operations Ratio:** (defined on page 16)

**Net Milk Receipts:** The mail box price received by farmers before any farmer authorized assignment or deductions.

**Net Worth:** The value of assets less liabilities equal net worth. It is the equity the owner has in owned assets.

**Nondairy Feed:** All grain, concentrates, and roughage purchased and fed to nondairy livestock.

**Nonfarm Noncash Capital:** (defined on page 13).

**Nontillable Pasture:** Permanent or semi-permanent pasture land that could not be included in a regular cropping sequence or rotation.

**Operating Costs of Producing Milk:** (defined on page 33).

**Operating Expense Ratio:** The percentage of total accrual receipts that is used for operating expenses, excluding interest and depreciation.

**Opportunity Cost:** The cost or charge made for using a resource based on its value in its most likely alternative use. The opportunity cost of a farmer's labor and management is the value he/she would receive if employed in his/her most qualified alternative position.

**Other Forage:** All forage crops harvested but not included as hay crops or corn silage, e.g. oats, barley, and sudan grass harvested as roughage.

**Other Livestock Expenses:** All other dairy herd and livestock expenses not included in more specific categories. Other livestock expenses include; bedding, DHIC, milk house and parlor supplies, livestock board, registration fees and transfers.

**Part-Time Dairy (farm):** Dairy farming is the primary enterprise, cropland is owned but operating and managing this farm is not a full-time occupation for one or more people.

**Partnership:** Business is owned by two or more individuals who share profits according to their contribution of labor, management, and capital.

**Percent of Heifer Inventory Custom Inventory:** The percent of current heifer inventory owned by the farm that is being custom raised off the farm.

**Percent of Replacements Purchased:** The percent of replacements that calved in the herd for replacement purposes (not expansion cattle) that were different genetic background than your herd and were purchased.

**Personal Withdrawals and Family Expenditures Including Nonfarm Debt Payments:** All the money removed from the farm business for personal or nonfarm use including family living expenses, health and life insurance, income taxes, nonfarm debt payments, and investments.

**Premium:** In milk marketing this typically refers to the amount paid for milk in addition to the minimum regulated price. Premiums may be paid to the producer or cooperative supplier of milk by a buyer depending on a variety of criteria such as milk quality, composition, quantity supplied, or services provided. They may also represent market supply/demand conditions not adequately accounted for in the regulated price.

**Prepaid Expenses:** (defined on page 13).

**Producer Price Differential:** Under Federal Order markets with multiple component pricing, it is the residual value (per hundredweight) of the pool after deducting component payments (protein, butterfat, and other solids) to producers. This residual value will vary between market orders and from month-to-month based on the utilization of the various classes and class price. It is possible that the PPD can even be negative at times if, for example, the class III price exceeds the class I price.

**Profitability:** The return or net income the owner/manager receives for using one or more of his or her resources in the farm business. True "economic profit" is what remains after deducting all costs including the opportunity costs of the owner/manager's labor, management, and equity capital.

**Purchased Inputs Costs of Producing Milk:** (defined on page 33).

**Repayment Analysis:** An evaluation of the business' ability to make planned debt payments.

**Replacement Livestock:** Dairy cattle and other livestock purchased to replace those that were culled or sold from the herd during the year.

**Return on Equity Capital:** (defined on page 16).

**Return to all Capital:** (defined on page 16).

**Sell Rate:** The percentage of the average number of milking and dry cows that were sold for culling reasons. Animals that were sold as replacement stock to other dairy farms is not included in this number.

**Sole Proprietorship:** Business is owned by one individual but there may be more than one operator.

**Solvency:** The extent or ability of assets to cover or pay liabilities. Debt/asset and leverage ratios are common measures of solvency.

**Specialized Dairy Farm:** A farm business where dairy farming is the primary enterprise, operating and managing this farm is a full-time occupation for one or more people and cropland is owned.

**Statement of Owner Equity (reconciliation):** (defined on page 19).

**Taxes** (expenses): Real estate taxes (school, town, and county). Payroll taxes are included as a hired labor expense. Income and self-employment taxes are a personal expense for all noncorporate taxpayers.

**Tillable Acres:** All acres that are normally cropped including hayland that is pastured. Acres that are doubled cropped are counted once.

**Tillable Pasture:** Hay crop acreage currently used for grazing that could be tilled in a regular cropping sequence.

**Total Costs of Producing Milk:** (defined on page 33).

**Value of Calf Sold:** The average value received for bull and heifer calves sold as calves during the year.

**Value of Cow Sold:** The average value received for animals that were sold for culling reasons.

**Whole Farm Method:** A procedure used to calculate costs of producing milk on dairy farms without using enterprise cost accounts. All non-milk receipts are assigned a cost equal to their sale value and deducted from total farm expenses to determine the costs of producing milk.

**Worker Equivalent:** The number of full-time workers equivalent to all the full and part-time people working throughout the year. Operator and family labor is included. Worker equivalents are determined by converting all work to full-time months (based on a 230 hours per month) and dividing by 12.

**Working Capital:** A theoretical measure of the amount of funds available to purchase inputs and inventory items after the sale of current farm assets and payment of all current farm liabilities. Calculated as current farm assets at end year less current farm liabilities at end year.

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